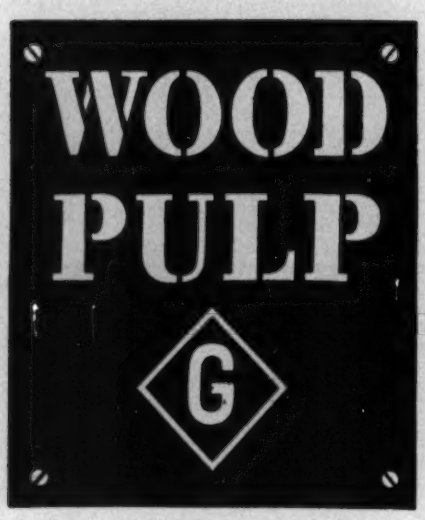
Paper

Mar. 23, 1951

WHAT RECENT DEVELOPMENTS HAVE BEEN MADE IN PRODUCING PULP FROM STRAWS, GRASSES, BAGASSE, ETC.? . . . SEE PAGE 16

GOVERNMENT BIDS & AWARDS



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recorded experience?"
CARLYLE

What medium has served man as well as Paper, to record knowledge and experience down through the centuries? What medium has played such an indispensable role on a thousand fronts in all industries?

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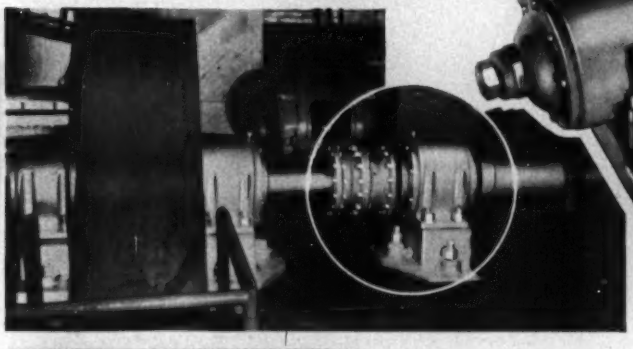
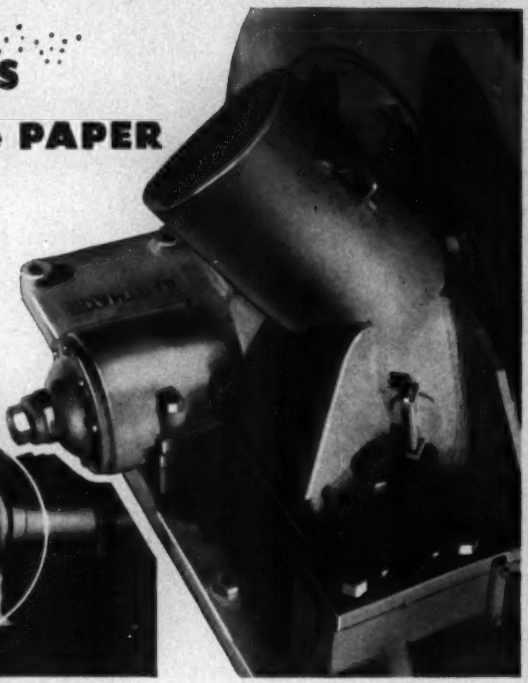
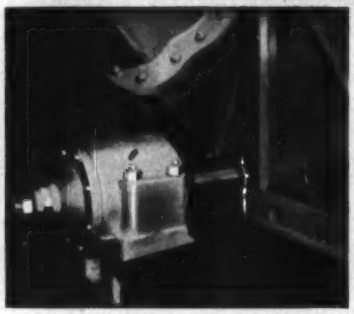
the *finer* the CHIPS
the *finer* the PAPER

. . . that's the story with the

CARTHAGE CHIPPER







Carthage Machine Company, Carthage, N. Y., manufactures a precision built chipper that literally chews pulpwood logs into the even, uniform chips that mean the production of the highest quality pulp for the highest quality paper. Knives may be pre-set in the grinder room, reducing down time for knife changes to a fraction of that necessary when knives must be set individually.

On the most popular sizes, the rotating mass is nearly 33,000 pounds—which must be held exactly to a pre-set position. In addition the danger of crack-up must be eliminated. All this means that bearings must be able to withstand the toughest sort of punishment—soundest reason of all why SKF Spherical Roller Bearings are used. Time and again they have proved their ability to withstand severe and continuous shock loads, take thrust and radial loads in their stride. Once again SKF has demonstrated ability to help industry put the right bearing in the right place.* 7145

**For information on the Carthage Multiple Knife Chipper, write Carthage Machine Company, Carthage, N. Y.*

8 REASONS WHY SKF IS PREFERRED BY ALL INDUSTRY

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- craftsmanship
- metallurgy
- tolerance control
- surface finish
- product uniformity
- engineering service
- field service

SKF

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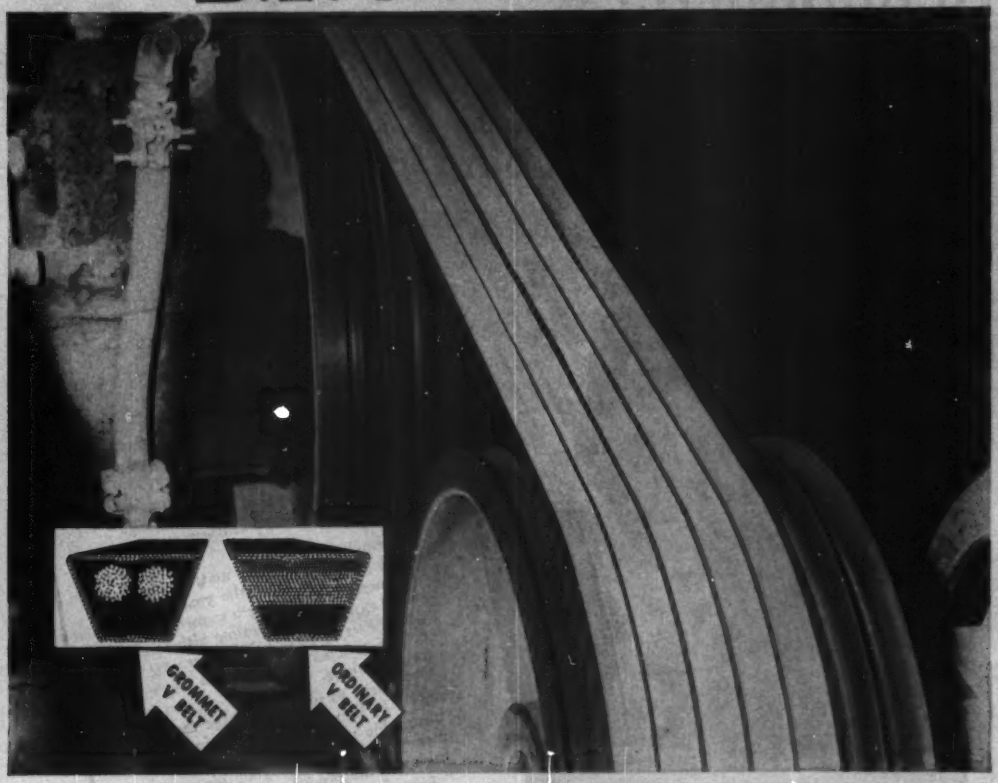
RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER



Five grommet V belts doing the work of 8

B. F. Goodrich grommet V belts cut costs 20 to 50%

THIS is actually an 8-belt drive but a plant accident damaged three of the belts and the engineers decided to let the remaining five belts run and see what happened. They've done the job perfectly because they're B. F. Goodrich grommet V belts—here's where that extra strength comes from:

No cord ends—A grommet is endless, made by winding heavy cord on itself to form an endless loop. It has no overlapping ends. Because most of the failures in ordinary V belts occur in the region where cords overlap, the endless cord section in a grommet V belt eliminates such failures.

Concentrated cord strength—All of the cord material in a B. F. Goodrich grommet multiple-V belt is *concentrated* in twin grommets, positioned close to the driving faces of the pulley. No layers of cords to rub against one another and generate heat; cord and adhesion failures are reduced.

Better grip, less slip—Because a grommet is endless, a grommet V belt is more flexible, grips the pulleys better. Size for size, grommet multiple-V belts will give ⅓ more gripping power, pull heavier loads with a higher safety factor.

Only B. F. Goodrich has the grommet!—No other multiple-V belt is a grommet V belt (U. S. Patent No. 2,233,294). Now available in C, D and E sections. See your local B. F. Goodrich distributor. Ask him to show you his "X-ray" belt that illustrates grommet construction clearly. *The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio.*

Grommet V Belts BY

B.F.Goodrich

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Headquarters

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For no matter *what* the corrosive conditions in your plant, we can suggest the most economical way to meet them.

Usually it's a simple matter of recorded history. Over the years, our engineers have built up a tremendous file of case histories—dealing with just about every pipe or tubing operating condition. This information is yours for the asking.

It works to your advantage three ways: 1) You guard against using an unsuitable material. 2) You'll save money by being sure your pipe or tubing is the proper grade and economical for the job. 3) If the analysis you need is in short supply, we'll help you select as good a substitute as possible.

This service doesn't cost you a penny. But it may save thousands of dollars in longer service from the pipe and tubing you're getting. Write today to National Tube Company, Frick Building, Pittsburgh 19, Pa.

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(Tubing Specialties Division) **PITTSBURGH, PA.**

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Paper TRADE JOURNAL

ABP

Vol. 132 **MARCH 23, 1951** **No. 12**

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ARTHUR E. GORDON, Vice-President
FREDERICK E. WINKLER, Secretary

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E. P. McGINN, Industrial Editor
E. P. NUTTALL, Associate Editor

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NEXT WEEK

Substantial reductions in power consumption and increases in production resulting from improvements made in the stock preparation system, over a period of several years at the National Container Co., Jacksonville, Fla., are described in "Stock Preparation in the Manufacture of Linerboard" by W. C. Hayes.

An informative description of the many uses of paper by American Railroads is contained in "An Ounce per Train Mile" by Seaboard Railroad.

An interesting explanation of some of the apparent lack of faith by bankers in Forestry and tree farming is found in "Bankers: Blind Spots in Forestry" by G. G. Ware, chairman, Forestry Committee, American Bankers Assn.

REMEMBER THESE DATES

MARCH 27: Salesmen's Assn. of the Paper Industry, Eastern Division, Luncheon Meeting, Beverly Hotel, New York City.

APRIL 2-4: National Paper Trade Assn., Annual Convention, Waldorf Astoria, N. Y. C.

APRIL 29: Alumni Dinner of Syracuse University, College of Forestry, Fraunces Tavern, New York City.

APRIL 29-30: American Management Assn., 20th Nat'l. Packaging Exposition, Auditorium, Atlantic City, N. J.

APRIL 30 - MAY 4: Materials Handling Conferences; Held concurrently with Nat'l. Materials Handling Expn., International Amphitheatre, Chicago, Ill.

MAY 4-5: American Pulp & Paper Mill Supts. Assn., Northwestern Div., Spring Meeting, Radisson Hotel, Minneapolis, Minn.

MAY 7-11: Forest Products Research Society, Annual Meeting and Industry Show of 1951, Convention Hall, Philadelphia, Pa.

MAY 11-12: American Pulp & Paper Mill Supts. Assn., Penn. New Jersey-Delaware Div., at Hotel Easton, Easton, Penna.

MAY 13-16: American Institute of Chemical Engineers, Regional Meeting, Hotel Muehlebach, Kansas City, Mo.

JUNE 3-6: National Paper Box Mfrs. Assn., Haddon-Hall, Atlantic City, N. J.

JUNE 24-28: Superintendents National Convention, Multnomah Hotel, Portland, Ore.

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CONVERT DRIER ROLL BEARINGS FROM BLOCK GREASE TO OIL CHEAPLY, QUICKLY

• Decrease Power Consumption As Much As 20% • Protect Bearings Better • Replenish Lubricant Less Frequently • Cut Lubricant Costs • Reduce Other Maintenance Costs

Drier roll bearings in all modern paper mills are oil-lubricated. Here's why. At best, block grease provides only boundary lubrication. And a block grease which feeds in the right amount where operation is at one temperature, will feed too much on drier bearings running hotter, and too little on those running cooler. In addition, at higher temperatures block grease tends to char and lose its lubricating effectiveness. As a result, in many mills maintenance men have to go from bearing to bearing every day, hand-oiling the grease. Furthermore, with block grease more lubricant is needed, its cost is more, and it has to be replenished about four times as often.

All this adds up to higher power consumption, more frequent bearing failures, and higher maintenance costs. *Conversion of older driers to oil lubrication overcomes all these disadvantages.*

HOW TO DO IT. A simple mechanical device, which can be made in your own maintenance department or any local metal shop, converts drier roll bearings from block grease to oil in a matter of hours. The cost generally runs well under $5 per bearing, and the installations can be made by your own maintenance crew. The savings in time, money and performance will quickly repay the small cost of conversion.

FOR A FREE FOLDER, with photographs and diagrams showing how to make the conversion, fill in the coupon below. Within our marketing area, a Sun representative will call and explain in detail how the conversion is made and what oil should be used for maximum efficiency. To mills outside our marketing area we will be glad to mail the folder as a small contribution to the nation's urgent need for greater paper output.

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Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, March 21, 1951.

Neither "the Big Show" of the Senate Crime Committee's investigation now under way in New York, nor the coming of Spring and Easter week preparations holds the center of the stage for pulp and paper men.

Second-quarter pulp prices, world market demands, and a price-freeze regulation that was served up while still unripe are putting on a show of their own. To press time, principals for most of the rings were not ready though it was much past curtain time.

Main facts involved need no retelling. In the face of world market needs for its wood pulp, Scandinavian mills feel the time is right to lift prices to levels they have been getting elsewhere—Japan, South America, Europe. Prices on Swedish bleached grades are reported at $100 over first quarter levels. Later reports for unbleached krafts range about the $300 mark and over. U. S. trade protests about these rises are that world market sales are usually made with ECA dollars and that the prices paid are inflated on barter agreements to soft currency areas, thus are not true values.

Major Swedish and Norwegian announcements are being delayed while principals study the matter with their U. S. agents.

New Import Order Awaited

Another factor is the much-heralded liberalization of the Imports Section of the OPS price-freeze order. Without some easing in the limits of this regulation, pulp brought in by importers — whether Scandinavian or Canadian — are frozen to first-quarter contract levels; and any rise in price must receive approval of OPS.

Revision of the general import order possibly will be announced by Director of Price Stabilization, Michael V. DiSalle, at the 31st Anniversary Luncheon of the National Council of American Importers being held at the Waldorf Astoria Hotel today. Importers look for a relaxation of the regulation which will permit moderate rises in pulp prices to be passed along all down the line. (See page 11.)

In view of an imminent rollback in some product prices, and the possibility that some grades of paper and boards will be included, a new rise in paper prices is not consistent. Thus the show still goes on.

U. S. Paper Market Trends

To the wise, it is evident that today's market holds those misleading elements which could trap overseas producers into committing hari-kari. Pulp is wanted so badly that phenomenal prices have been paid for pulps and for waste paper substitutes. Why? Because demand for paper and boards has been soaring, customers urging and pressing for more and more.

This demand, however, was made up partly of forward buying of business forms, envelopes, papers, etc., which ceased when the price-freeze gave assurance that a ceiling had been reached.

For this inventory buying, sizable bank loans were taken. Inventories are said to be at peak level and to have been financed by borrowed money. Lenders are being urged by the voluntary credit restraint committee of the Federal Reserve Board to stop making such loans and to cooperate in reducing such wholesale and retail inventories. Banks are understood to be pressing for liquidation of the accumulations. New loans are reported to require reduction on a monthly basis. Many types of goods: textiles, hosiery, garments, appliances, televisions are already being forced on to the market to lighten inventories.

Industry leaders expect that not only will stocks of fine papers be readily available on the open market before long, but that cancellations may follow at the mill level. It is not expected that Defense Orders will take up the slack.

Coarse papers which have packaged these products should now begin to ease in demand, though, as reported in last week's "Trends," stockpiling of all wrapping materials has not been possible by either distributor or consumer. A sudden lessening in demand would remedy this situation quickly at the current rate of paper and board production, it is stated.

Considering the many, many confusing elements in the supply-demand picture and the terrific pressure under which the industry has been working since "Korea," it is notable that no one is downcast over the possibilities of a dip. It is anticipated as much as a Bermuda vacation in January. It will be a breather, an adjusting period, and a leveler of many supply problems.

New Pulp Capacity Ahead

While paper demand is diminishing, domestic pulp capacity will be growing. Considerable increase is due for the second quarter through increase in current pulp operations, improvements in existing facilities, new production getting underway, etc. Industry spokesmen state that the increase in volume will come in the next quarter and gradually agglomerate throughout the year, as new mills get into operation.

Close to one and a half million tons of new capacity is expected by the close of 1951, much of which will be available to U. S. mills at prices close to the frozen first-quarter levels.

The Dog Wags the Tail

To evaluate the Scandinavian pulp supply and its price as the center of the show is to see it from a distorted position. One may never lose sight of the principal factors: demand for paper and the North American pulp supply.

Students of economics in general and of paper industry trends in particular believe a decided easing in demand will come in the second quarter of 1951, and that domestic pulp supply will increase to a point where it will threaten the Scandinavian market here. This is the dog which wags the tail.

— E. P. N.

U. S. PRODUCTION AND CONSUMPTION OF WOOD PULP AND OTHER FIBROUS MATERIALS BY KINDS, 1950 AND 1949
(Tons of 2,000 Pounds)

Item	Production		Consumption	
	1950 Preliminary	1949	1950 Preliminary	1949
ALL FIBROUS MATERIALS (excluding PULPWOOD)	14,827,152	12,171,786	25,830,963	21,421,082
WOOD PULP, TOTAL	14,827,152	12,171,786	16,487,110	13,606,387
Sulphite, total	2,855,825	2,536,284	3,331,668	3,011,662
Bleached	2,111,332	1,829,021	2,072,356	1,850,246
Semibleached	374,958	263,837	404,458	277,449
Unbleached	744,493	707,263	1,259,312	1,161,416
Sulphate, total	7,508,376	5,977,281	8,380,864	6,677,764
Bleached	1,422,483	1,118,282	1,844,322	1,484,489
Unbleached	5,710,935	4,595,362	6,132,884	4,915,826
Soda	522,990	492,194	564,355	525,877
Groundwood	2,220,795	1,960,496	2,483,980	2,184,409
All Other	1,719,166	1,205,531	1,726,243	1,206,675
FIBROUS MATERIALS OTHER THAN WOOD PULP TOTAL	....	....	9,343,855	7,814,695
Waste paper	....	....	7,903,612	6,599,604
Straw	....	....	405,756	385,890
Rags	....	....	442,330	381,915
Flax	....	....	d	53,332
Miscellaneous fiber	....	....	d	393,952

d Withheld to avoid disclosing data for individual companies.
Source: Department of Commerce—Bureau of the Census.

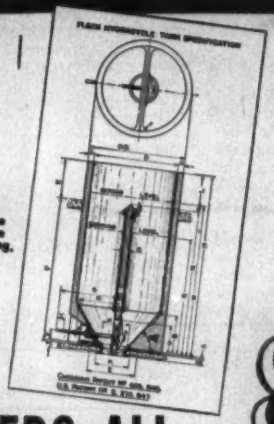
Paperboard Production (Tons)*

	Mar. 10 1951	Mar. 3 1951	Mar. 11 1950
Production	249,472	245,830	191,702
New Orders	254,539	345,004	219,328
Unfilled Orders	759,490	758,562	395,211

* Source: NPA.

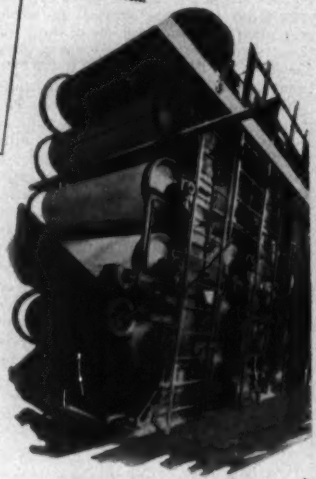
VERTICAL EQUIPMENT

Shartle Hydraclone for sand and grit removal.



Fleck type Hydrocycle tank drawing.

Shartle vertical cut-flow unit.



Black-Clawson vertical dryer section.

SPACE SAVERS ALL

Where space is at a premium, space saving equipment is bound to be considered—for instance:

Pumping. Water, white water and high density pumps are available at Shartles. All required capacities. Ideal not only for use in restricted areas but also in basements subject to flooding.

Agitating. Shartle combination agitator-pump units known as Agi-flo equipment is available in a vertical design as well as in the more standard horizontal design. For cramped quarters and flood hazard locations.

Stock Cleaning. The new sand and grit extractor, known as the Hydraclone, certainly is a vertical unit since it occupies only 18 sq. ft. of space immediately following a Hydrapulper.

Chests. Hydracycle "tanks" and duo-cycling chests employed along with HYDRAFINERS to recirculate and HYDRAFINE stock are in reality specially designed vertical chests.

Drying. Every paper maker is familiar with B-C dryers arranged in vertical stacks—main reason better use of available space.

Forming. The superimposing of presses atop cylinder machine vats is a still further instance of space saving. A tremendous advantage in many a mill.

Shartle vertical centrifugal stock pump.

Everything for the Paper Mill

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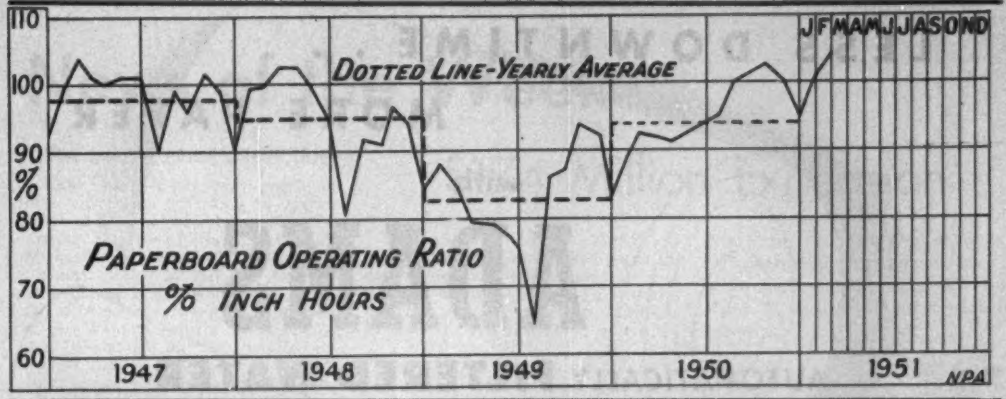
66/68 Haymarket, London, S. W. 1, England

Vat and superimposed press of recent Black-Clawson installation.

BLACK-CLAWSON • SHARTLE • DILTS



Weekly Brief of Important Figures

Source	Production	WEEK ENDING Mar. 10, '51	Feb. 10, '51	Mar 11, '50
APPA	Paper Production Percent Capacity[2]	102.6	98.2	96.8
	Unbl. Kraft Paper Production Percent	99.2	101.3	96.1
NPA	Paperboard Operating Ratio Percent Inch Hours	106	104	89
		Jan. 1951	**Dec. 1950**	**Jan. 1950**
APPA	Paper Production[6] (Except Newsprint and Building Papers) Tons	892,000	828,155	778,408
	New Orders Tons	936,360x	823,397	788,763
	Unfilled Orders Tons	910,835x	859,475	509,600
	Shipments Tons	885,000	841,777	765,803
		Feb. 1951	**Jan. 1951**	**Feb. 1950**
NPA	Paperboard Production Tons	977,946	1,176,679	817,000
	New Orders Tons	987,609	1,349,991	802,800
	Unfilled Orders Tons	758,562	761,828	314,600
	Our Customers Activities Index[1]	**Latest Mo.[5]**	**Previous Mo.[5]**	**Year Ago[5]**
FRS	Manufactures Total Index	227	225	186
	Durable Mfg. Index	266	260	201
	Nondurable Mfg. Index	195	197	175
	Chemical Products Index	284	283	249
	Mfg. Food Products Index	158	164	156
	Printing and Publishing Index	180	182	162
ODC	Magazine Advg.-Printer's Ink Index	319	342	291
	Retail Sales Combined Adjusted Index	343.4	323.9	302.3
	Drug Index	224.5	219.9	218.1
	General Merchandise Group Index	332.5	312.7	294.6
	Grocery and Combination Index	424.4	399.5	361.9
	Prices Index			
BLS	Consumers Price Index[1]	178.4	175.6	167.5
	Wholesale all Commodities[2]	175.3	171.7	151.2
	Wholesale Foods[2]	179.1	175.2	155.7
	Commodities other than Farm Products and Foods[2]	166.6	163.7	145.4
	Wholesale Pulp and Paper[2]	189.0	178.7	156.0
	Purchasing Power of Dollar, Consumers Prices[1]	56.1	56.9	59.7
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	414.9	415.8	329.3
	Unemployment Compensation Initial Claims (M)	1,051	907	1,630
	Miscellaneous Carloadings–Thousands of Cars	1,814	1,569	1,542
	Electric Output (Million KW hr.)	35,779	34,072	31,162
PTJ	Average 32 P & P Common Stocks as of Mar. 13	$37.22	$38.57	$31.54
	Average Indicated Dividends Common Stocks as of Mar. 13	$ 2.34	$ 2.39	$ 2.26

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
[3] New 6-7 day basis
[4] For details see APPA Monthly Statistical Summary
[5] Latest Month Available on Request
x Revised figures.

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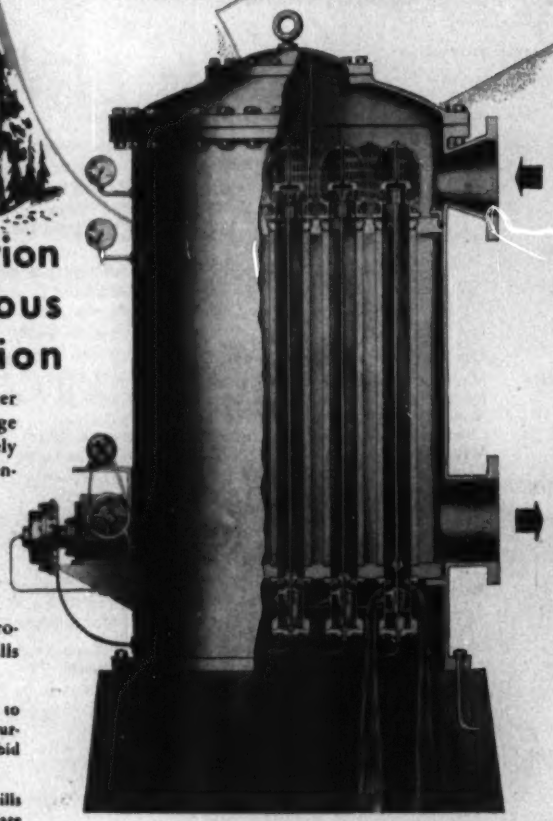


Continuous protection for your continuous machine operation

Higher production goals of today's faster machines must be protected—continuously. Large volumes of water, carrying proportionately larger amounts of impurities, need more attention than ever before.

Clean, automatically filtered water can eliminate down time due to plugged shower nozzles, helps avoid mid-week shutdowns for washing clogged felts.

Experience with Adams Poro-Screen and Poro-Stone Water Filters in pulp and paper mills from coast to coast has proved:

1. Continuous filtration can be relied upon to remove all objectionable impurities, even during seasonal conditions of highly turbid supply.
2. Production continues in Adams-equipped mills when others using the same water source are shut down for cleaning.

Write for your copy of the new 20 page booklet on water filtration in the Pulp and Paper Industry, Bulletin No. 691.

R. P. ADAMS COMPANY, INC.

231 EAST PARK DRIVE, BUFFALO 17, N. Y.

News of the Week

Paper TRADE JOURNAL

NEW IMPORT PRICE ORDER DUE

NEW YORK—A new price regulation that will permit importers to operate much as they did before January 25 is coming, Director of Price Stabilization Michael V. DiSalle said here today.

Guest speaker at the 30th Anniversary Luncheon of the National Council of American Importers, Inc. held at the Waldorf-Astoria on March 21, Mr. DiSalle told the 900 assembled importers that he had hoped to be able to announce the signing of a new regulation that would permit them to operate pretty much as they had in the past.

"I can say," he said, "that although that regulation isn't ready today, it will be ready in just a matter of a few days and that, generally, it will provide for your landed costs plus your pre-Korea markup. It necessarily will be in the nature of an interim regulation because we hope that, by some method of international agreement, we may be able to have a more effective price control for importers. Right now we are interested in getting you back into business and permitting you to keep healthy while we are attempting to find what we believe will be the eventual answer, not only to your problem, but to the problems of the nation generally."

Mr. DiSalle was introduced by the outgoing president, Morris S. Rosenthal, president of Stein-Hall & Co., Inc., who was presented with a silver tray in token of the Council's esteem.

Also represented at the luncheon were Morningstar-Nicol, National Starch Products, Pagel Horton & Co., Inc., Darmstadt, Scott & Courtney, Paper Makers Importing Co., Inc., H. Reeve Angel & Co., Wm. Steck & Co., E. J. Keller Co., Celanese Corp. of America, Oxford Paper Co., West Virginia Pulp and Paper Co.

INDIA MAKES CIGARETTE PAPER

Situated thirty-five miles north of Calcutta, Tribeni Tissues Ltd., has started production of cigarette paper. Built at a cost of four million dollars, the proposed output of this mill is 240 tons of cigarette paper per month. This production of superior-quality paper is sufficient to roll nearly 5.5 billion cigarettes. India imports cigarette paper today from abroad. The output of this mill is expected not merely to meet India's needs (which is about 100 tons) but be available for export to the Americas, Australia and other countries. The raw materials which are hemp and seed flax are available in the United Provinces, a state of the Indian Union.

$174 Million Expansion

WASHINGTON, D. C. — Paper and paperboard, pulp and related paper industry facilities were extensively represented in the latest list of certificates of necessity authorized by Defense Production Administration, permitting accelerated tax write-offs on outlays for expanded defense production.

Included in the total of 231 companies in various industries were the following:

MILL AND LOCATION	PRODUCT	AMOUNT CERTIFIED
Halifax Paper Co., Roanoke Rapids, Va.	Kraft Pulp, Paper and Corrugating Board	$6,200,000
Gibraltar Corrugated Paper Co., North Bergen, N. J.	Corrugating Paper Board	2,269,850
Fitchburg Paper Co., Fitchburg, Mass.	Paper	598,614
Union Bag & Paper Co., Savannah, Ga.	Corrugated Boxes, Paper and Waxed Paper	18,000,000
Riegel Paper Corp., Columbus Co., N. C.	Pine Pulp and Hardwood Pulp	13,807,500
North Carolina Pulp Co., Plymouth, N. C.	Semi-Chemical Pulp	1,051,713
Hollingsworth & Whitney Co., Mobile, Ala.	Pulp and Specialty Papers	13,800,000
Mead Corp., Location not given	Kraft Container Board	21,480,000
Mead Corp., Chillicothe, Ohio	Wood Pulp	4,930,500
Mead Corp., Kingsport, Tenn.	Soda Wood Pulp	4,258,000
Thilmany Pulp & Paper Co., Kaukauna, Wis.	Kraft Paper	2,962,000
St. Joe Paper Co., Port St. Joe, Fla.	Kraft Container Board	24,810,958
American Box Board Co., Filer City, Mich.	Wood Pulp	7,694,446
Lee Paper Co., Vicksburg, Mich.	Fine Paper, Bonds, Maps, etc.	1,000,745
Weyerhaeuser Timber Co., Everett, Wash.	Pulp	19,125,000
Weyerhaeuser Timber Co., Longview, Wash.	Pulp, Container Board	12,469,377
International Paper Co., Natchez, Miss.	Bleached Pulp	20,937,658
TOTAL		174,596,361

Reopening of Port Mellon Mill

Formal agreements have now been concluded for the acquisition of a majority interest of Sorg Pulp Co., Ltd., Port Mellon, B. C., by Canadian Forest Products Ltd., Vancouver, B. C. The Sorg Paper Co., Middletown, Ohio, previous owner of Sorg Pulp Co., Ltd., is retaining a minority interest in the new company, which is to be known as Howe Sound Pulp Co., Ltd. A small interest was purchased by Perkins-Goodwin Co., New York City, who will act as the exclusive sales agent for Howe Sound Pulp Co., Ltd. Jay Corp., New York City, served as broker in the transaction.

A very extensive program of rehabilitation and modernization of the mill is in progress at Port Mellon. Operation of the mill is expected to begin on May 1, 1951, with production at the rate of approximately 120 tons per day of unbleached kraft pulp, gradually increasing to 175 tons daily. Approximately $4 million will be spent for improvements over the next twelve months. P. R. Sandwell of Vancouver is in charge of the engineering and B. C. Bridge and Dredge Co., Ltd., of Vancouver, is the contractor.

Eburne Saw Mills Div. of Canadian Forest Products Ltd. will produce the bulk of the necessary chips and supplement any shortage by buying sawmill waste material from other mills in the Vancouver area. This source, coupled with the timber resources of Canadian Forest Products Ltd., should guarantee an unlimited life for Howe Sound Pulp Co., Ltd.

The mill will give permanent employment to approximately 200 people immediately. The present townsite is also undergoing a complete rehabilitation program to provide the best housing facilities.

The Provincial Government, recognizing the importance of this project to closer forest utilization and to the whole economy of the Province and the Sechelt Peninsula in particular, is completing the road from Gibson to Port Mellon this year. This, together with the new car ferry service starting this spring from Horseshoe Bay to Gibson, will practically bring Port Mellon into the Greater Vancouver Area.

Good Employee Relations

Most business houses today recognize the fact that employee good will is as important to business success as are satisfied customers. However, there are still but relatively few companies like Blake, Moffitt & Towne, pioneer paper distributors, that plan and carry out programs which actually show the employee the many steps taken in his behalf. A company may have the most comprehensive security and welfare program ever devised, yet it often remains a mystery until he is told and sold the idea that here is something that has been developed especially for him and his family.

"Statement of Benefits," the new folder Blake, Moffitt & Towne are sending to their employees, has done much to overcome the indifference of the average worker toward his welfare and security benefits. "Employees at Blake, Moffitt & Towne are encouraged to make careers of their jobs," States J. J. Dellwig, personnel manager, "we want them to consider their opportunities and the security provided for them and their dependents as well as their 'take home' pay."

The "Statement of Benefits" is a real help in accomplishing this result. Mailed to the home of the employee, the piece presents in graphic form many of the advantages he enjoys as a member of the BM&T Family. The six page folder, 5 by 8½ inches in size, is individually prepared for each employee. As explained on the front cover the Statement has been designed to "show the estate created by you and Blake, Moffitt & Towne for the health, security and welfare of you and your family."

Taking as a typical case an average employee, his total benefits may well be in excess of $20,000. The component parts of this impressive figure include such major factors as life insurance, hospital benefits, retirement annuity, medical and surgical benefits, accident and sick leave pay, etc.

Included among other efforts of the company to add to its well established good will with the employee is a 32 page booklet entiled "Welcome to the BM&T Family." Presented at the time of hiring, the booklet serves to acquaint the employee with the origin, progress and position of his company together with his rights, privileges and responsibilities as a member of the Family. This year Blake, Moffitt & Towne takes another step in its employee relations program with the announcement that three weeks vacation will be given employees beginning with their fifteenth year with the company.

YOUR STATEMENT OF TOTAL BENEFITS

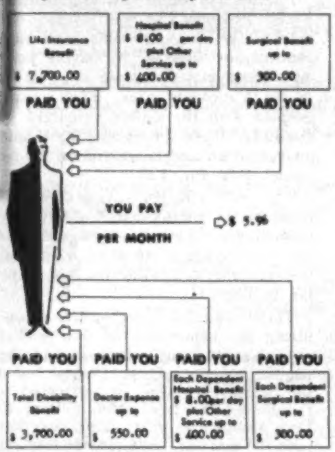
(1) Life Insurance	$7,700.00
(2) Accidental Death Benefit	
(3) Total Disability Benefit (Covered by Life Insurance Policies)	
(4) Hospital Benefit	2,400.00
(5) Surgical Benefit	600.00
(6) Doctor Expense	850.00
(7) Accrued Accident and Sick Leave	923.00
(8) Paid Vacation	142.00
(9) Paid Holidays	85.20
*(10) Retirement Annuity (at Age 65)	7,690.00
Your Total Welfare and Security Benefits	$20,390.20

* 10. The amount shown represents ten years' benefits, although the monthly benefits continue for life. In case of death the full balance of what you have paid on this policy will be paid to your beneficiary. This is in addition to your life insurance.

As there is always a possibility of error in compiling hundreds of figures, if any of these seem incorrect or if you wish additional information, please speak to your supervisor.

BLAKE, MOFFITT & TOWNE

Group insurance benefits for you and your dependents



In addition to your contribution the company pays an equal or greater amount of the premiums necessary to make this plan possible. Additional welfare and security benefits are on the following page.

YOUR WELFARE and SECURITY PROGRAM

(1) Life Insurance — (a) $ 3,700.00 (b) $ 4,000.00 $ 7,700. Total — (a) Non-Contributory—entire cost paid by the Company (b) Contributory—you contribute to the cost

(2) Accidental Death Benefit $ 7,700.00 — Covered by Life Insurance Policies

(3) Total Disability Benefit $ 3,700.00 — Covered by Life Insurance Policies

(4) Hospital Benefit $ 2,400.00 — $8.00 per day to 100 days plus Other Services up to $400 for you and each of your dependents

(5) Surgical Benefit $ 600.00 — Up to $300 for any necessary Surgical Operations for you and each of your dependents

(6) Doctor Expense Benefit $ 850.00 — To cover Doctor Bills

(7) Accrued Accident and Sick Leave 13 Weeks — At your Full Base Pay

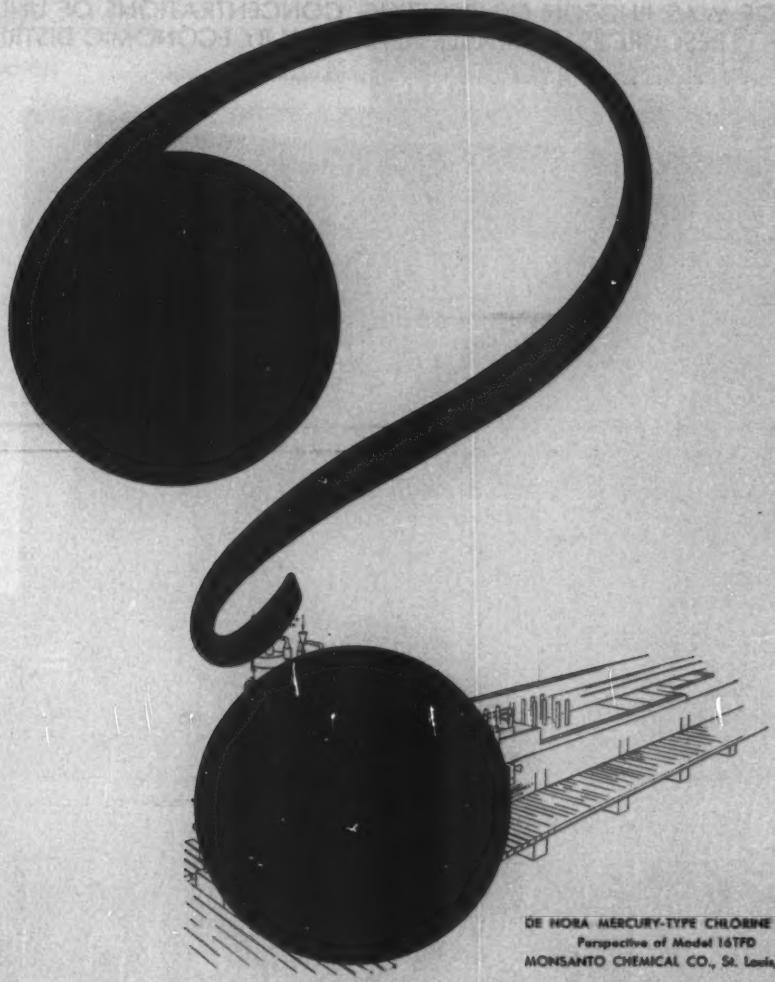
(8) Paid Vacation 2 Weeks — At your Full Base Pay

(9) Paid Holidays Per Year 6 — No deduction in pay for recognized holidays not worked

(10) Retirement Annuity Per Month $ 66.08 — Starting at age 65 and in addition to Government Social Security Benefits

1, 2, 3, 10—Insured with Equitable Life Assurance Society
4, 5, 6—Insured with Associated Indemnity Company
7, 8, 9,—Paid directly by the Company

Prepared January 1 19 51



DE NORA MERCURY-TYPE CHLORINE CELL
Perspective of Model 16TFD
MONSANTO CHEMICAL CO., St. Louis, Mo.

During World War II, chlorine for the paper industry was seventh on the list of limitation orders. With that reminder, let us suggest that you investigate the possibility of producing your own chlorine, thereby controlling your supply.

Monsanto offers you engineering service on the Monsanto Electrolytic Chlorine Process which has these advantages:

1. In addition to chlorine of high purity, it delivers rayon-grade caustic up to 73% without evaporators or purification.
2. All or part of the caustic production may be replaced by production of sodium sulfide or various other products.
3. It employs the De Nora mercury-type cell which has been used commercially for fourteen years. Of all mercury-type cells this is the most rugged and compact. It requires minimum maintenance and a minimum of floor space.

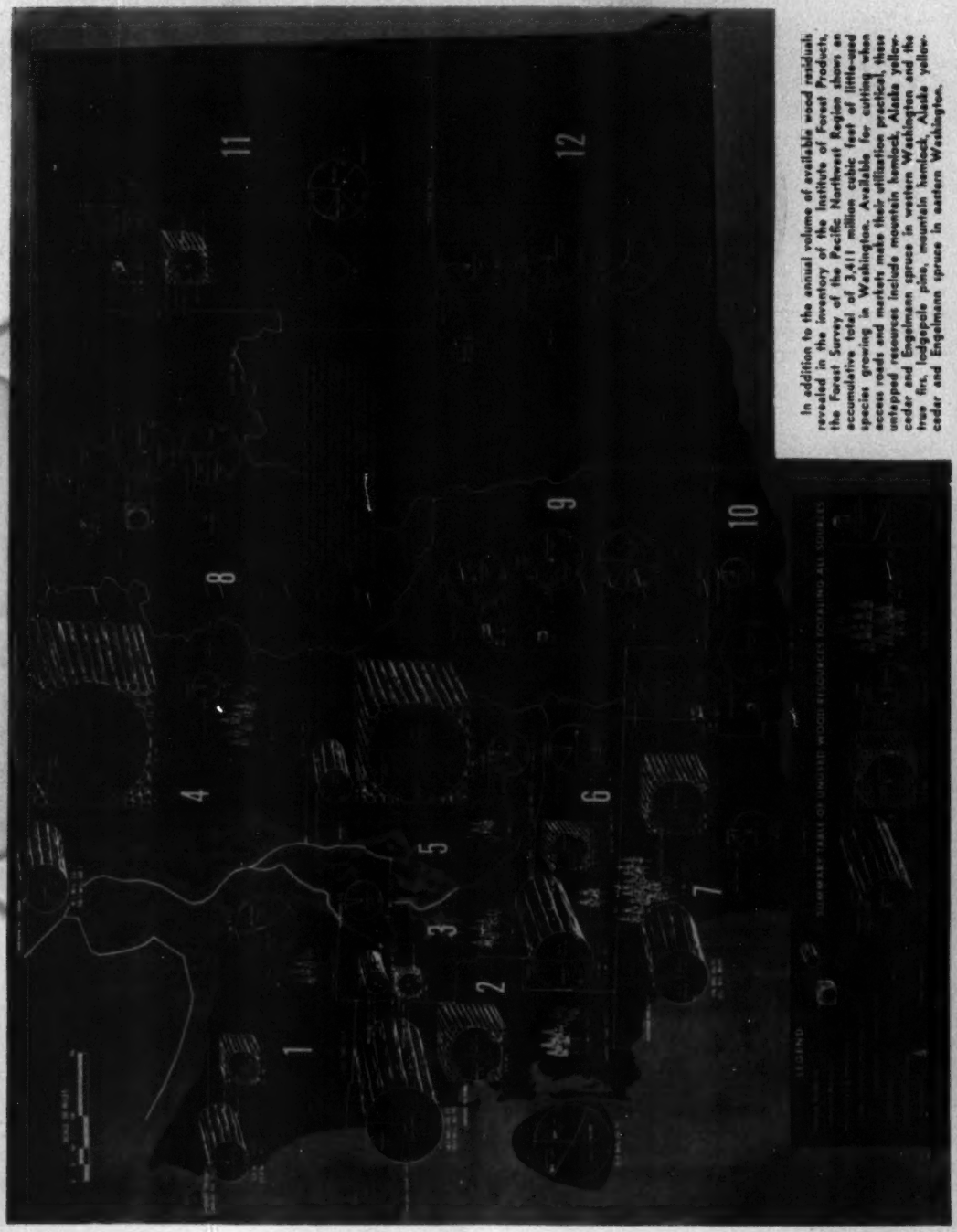
For complete information on the Monsanto Electrolytic Chlorine Process, write or wire MONSANTO CHEMICAL COMPANY, Engineering Sales Department, 1700 South Second Street, St. Louis 4, Missouri.

MONSANTO
CHEMICALS · PLASTICS

SERVING INDUSTRY...WHICH SERVES MANKIND

MAP OF WASHINGTON SYMBOLIZING CONCENTRATIONS OF UNUSED WOOD RESOURCES AVAILABLE ANNUALLY BY ECONOMIC DISTRICTS

Courtesy, Institute of Forest Products, 303 Anderson Hall, University of Washington, Seattle 5, Wash.



In addition to the annual volume of available wood residuals revealed in the inventory of the Institute of Forest Products, the Forest Survey of the Pacific Northwest Region shows an accumulative total of 3,411 million cubic feet of little-used species growing in Washington. Available for cutting when access roads and markets make their utilization practical, these untapped resources include mountain hemlock, Alaska yellow-cedar and Engelmann spruce in western Washington and the true firs, lodgepole pine, mountain hemlock, Alaska yellow-cedar and Engelmann spruce in eastern Washington.

GOVERNMENT GOSPEL

E.C.A. AUTHORIZATION

WASHINGTON, D. C. — Pulp, paper and related products for Burma totaling $87,000 was authorized by ECA this week, to be obtained in Hong Kong.

WASHINGTON, D. C. — Modernization equipment for an Austrian paper and board factory totaling $134,000 was among ECA authorizations this week.

The total includes office machines, appliances and parts for modernization of a pulp and paper mill for Arland Papier-und Zellstoffabriken A.G., at Andritz and Rechburg, Austria, and is a further procurement under a program reported earlier.

URGE CONSERVATION

WASHINGTON, D. C.—Conservation and maximum reuse of burlap and cotton bags, and other products made of these materials, is urged by Agriculture Department.

"Bagging and related materials are high on the list of essentials," the Department said.

Supplies of burlap and cotton for bagging are likely to grow increasingly tight, with a rising demand for both, based on the previous war experience, it was pointed out. Greater difficulty in getting burlap from foreign sources also is expected.

WASHINGTON, D. C. — The refractory manufacturing industry has been asked to practice every possible conservation measure to save containers and packaging materials used in shipment of refractory brick, including re-use where practicable.

Industry members meanwhile reported they are expanding output but suggested a ceiling on the quantity of DQ orders a company would be required to accept.

FOREST EQUIPMENT SURVEY

WASHINGTON, D. C. — A survey of equipment used in 1950 by all primary forest industries, including manpower and operating supplies, has been assigned to the Forest Service of Agriculture Department at the request of NPA.

The survey will furnish data for use by NPA in its priorities and allocation programs.

All important logging industries are to be covered including pulpwood, among others. In the case of pulpwood, said NPA, information made available by the American Pulpwood Association will be utilized as well as other data.

NPA APPOINTMENTS

WASHINGTON, D. C. — New appointments to NPA and other defense agencies announced last week include:

Charles H. Kendall, as general counsel of Defense Production Administration, and Major General Thomas F. Farrell, as deputy administrator for resources expansion, DPA.

SULPHURIC ACID ALLOCATION

WASHINGTON, D. C.—An allocation program for sulphuric acid has been recommended to NPA by an industry advisory group, based on end-use.

The proposed order would require purchasers to certify end use, but in eleven Far West states, because of the increasing number of sulphuric acid consumers and low supply, controls would be broadened to require specific NPA authorization on deliveries.

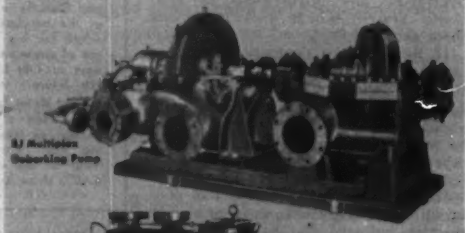
The agency reported that provisions governing sulphuric acid allocation would be included in the forthcoming general chemicals allocation order, and it was expected the broader allocation would be extended later to a national basis from the proposed regional regulations.

NPA pointed out that a serious problem exists in this country in distribution of the acid, due to difficulty in channeling distribution to defense and essential civilian uses arising from lack of specific data on end-use and supply-demand relationships. The pending order would attempt to correct some of these difficulties through requiring reports on production, deliveries and inventories.

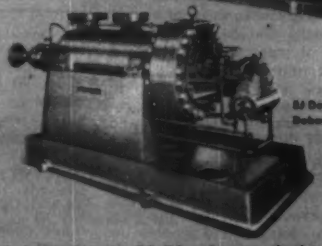
Your debarking PUNCH is only as potent as the pumping MUSCLE behind it...

BJ DEBARKING PUMPS

put real *wallop* into your hydraulic debarking. They have the pressure strength and the operating stamina to work continuously at full bark-blasting efficiency! Multiplex models deliver up to 1600 psi with capacities as required. Double Case models provide pressures up to 2800 psi and capacities to 1 million pounds per hour. BJ Debarking Pumps are engineered to your particular equipment and power set-up. Write for detailed performance data or recommendations on your debarking pumping—without obligation, of course.



BJ Multiplex Debarking Pump



BJ Double Case Debarking Pump

BJ also engineers and builds pulp, screw feeder, and other special centrifugal pumps for pulp and paper applications.

Byron Jackson Co.

P.O. Box 2017 Terminal Annex, Los Angeles 54, Calif.

Twenty-Five Years' Pulping Developments of Agricultural Residues

F. G. L. Beckler[1]

To fly around the world in 90 days on a business trip — as I have recently done — is an educational experience of the highest order. Since the editor has kindly asked me to write an article for the *Paper Trade Journal* about the use of agricultural residues for paper making, I feel that perhaps by acting on his suggestion I may be able to express my appreciation and thanks to those technicians and others connected with the hospitable American pulp and paper trade that I met in the course of my somewhat rapid trip through U.S.A. and Canada.

It is hardly possible to spend many weeks in such countries as Egypt, Pakistan, India and the Far East without realizing that in those countries at present the big issue is not really the atom bomb, as we seem to think, but poverty. Poverty is the "atom bomb" which may blow the world to pieces, unless we in the West really make up our minds to abolish it.

Lord Boyd Orr, Director General of the U.N.O. Food Organization, recently said: "People who are short of food and other primary necessities and who believe that these can be obtained, will overthrow any government or economic system which does not make them available."

If the Western democracies do not tackle this job, and fail to plan with the sound leaders in those countries for the creation of abundance and abolition of poverty, we need hardly be surprised if communism, or some other political force, tackles the problem in a way we do not like.

Industry has a very big part to play in all this. After all, it is primarily through industry that communism and other brands of materialism have been spread and propagated, and it is through a new kind of leadership in industry, which places first in its program the supplying of the material and moral needs of the community, that the answering ideas must come.

In this second half of the twentieth century, it seems to me that the management of private enterprise business must face the changes and trouble involved in tackling world problems if it wants to remain the management of private enterprise business!

The consumption of paper per head of the population in a country provides quite a good idea of the state of prosperity and economic development of that country. When one considers that the United States is alone consuming about 70 percent of the total world supply of paper or about 350 lbs. of paper per year per person — which compares with less than 1 lb. per head in India — the contribution which the pulp and paper industry has to make towards the future development of civilization and democracy in India and other countries at once becomes apparent.

As the demand for wood for papermaking increases, supplies tend to diminish. It has long been apparent that if these needs are to be met, new ideas, new raw materials and new methods must be applied to solve the vast problem of providing the world with enough paper for its needs. In these days paper is a primary raw material in the war of ideas, and without it education, civilization and democracy cannot develop.

F. G. L. Becker, Chairman and Managing Director of Cellulose Development Corp. Ltd., England, lost his life early in February when the air liner in which he was travelling from South Africa to Algeria crashed in the British Cameroons, on February 3rd. He was accompanied by H. Van der Reay, Chief Engineer of Celdecor Africa (Pty) Ltd., (South African subsidiary of the corporation), who also lost his life.

Mr. Becker, who visited the U.S.A. and Canada in the Spring of last year at the conclusion of a world tour, was noted for his pioneering work on the use of straw and other agricultural residues such as bagasse for papermaking. His interest in this aspect of paper making dates from early years when, as second son of the late Sir Frederick Becker, an issue of the London 'Morning Post' was printed on newsprint made at one of his father's mills with a 40% straw furnish.

My company, Cellulose Development Corporation Limited, was founded in 1938 to carry out research work and to provide some of the answers to the many technical and engineering problems involved in producing really high-grade papers from agricultural residues such as cereal straws, grasses and bagasse.

We were lucky in being able to start by acquiring the whole background of the knowledge and experience gained during a quarter of a century in this field by Dr. Umberto Pomilio of Italy, whose companies had been responsible during the decade preceding the second world war for building every successful new mill erected for the making of fine papers from agricultural residues and cereal straws.

My own interest in making papers from these raw materials began over twenty-five years ago. At that time I was given by my late father, Sir Frederick Becker, the job of studying and reporting to him upon the pulp mill which had been constructed to make paper pulps from cereal straws and esparto grass by the De Vains soda-chlorine process at Venette, near Compiegne, in France. This plant ran for some years and made strong, cream-colored, "free" bleached straw pulps, of which many hundreds of tons were shipped to Britain and used during the years 1925-26 at the Donside Papermills in Aberdeen, Scotland. My father was at that time chairman of this concern and also of the British De Vains Process Company.

Papers were made containing up to 100 percent of straw pulp, and issues of the *London Morning Post* and the *Edinburgh Evening Dispatch* were printed on newsprint containing over 40 percent of straw pulp. The paper stock containing straw ran perfectly on the Walmsley newsprint machines at what was, for those days, a top speed of about 500-600 feet per minute, and copies of the newspaper, one of which I have given to the editor for his file, are as fresh and strong today as when they were first made a quarter of a century ago.

The 1925 De Vains pulps, however, had their limitations and the papers made, while strong, were mostly of the "newsprint" or cheaper printings va-

[1] Cellulose Development Corp., Ltd., London, England.

Jordan-Type FAST'S COUPLINGS

last longer and cost you less

Here's why: Fast's Couplings normally outlast the equipment they connect. For example, take the first Fast's Jordan-Type Coupling, which was installed in 1922. The original Jordan machine was scrapped long ago. But the Fast's Coupling was saved and today that original coupling is still in use on another machine!

Fast's are the best insurance you can buy against needless and costly coupling failures. Because of their rugged construction and foolproof design... their reasonable cost can be spread out over 20 years or more to give you *lowest coupling cost per year.* And with Fast's Couplings, Koppers gives you engineering service unequalled in the industry. Find out about Fast's today!

Fast's Couplings assure long, trouble-free life. Records prove that Fast's installed in 1920 and 1922 are *still in use*... on sectional paper mill drives, on Jordan machines and on auxiliary machinery. And that's a record never equalled by any other flexible coupling!

For full details, engineering data, specifications and photographs, mail coupon today for your copy of Fast's *free* Catalog.

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Gentlemen: Send me Fast's Catalog which gives detailed descriptions, engineering drawings, capacity tables and photographs.

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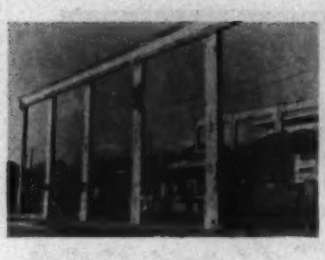

Figure 1—"Poverty, the atom bomb which may blow the world to pieces". Manila, 1950.

riety, and it would not have been wise to dignify the papers by a more high sounding title. It is perhaps not altogether surprising that many such processes seem to publicize their arrival by producing samples of so-called "newsprint" which I have noticed are, even nowadays, often produced at slower speeds than the 500-600 feet we achieved twenty-five years ago.

Several mills were constructed (in France, Java, Chile and elsewhere) to operate the De Vains soda-chlorine process, but in turn they either were closed down (like the Venette mill) or were converted to other processes or raw materials. These plants were based upon the old batch methods of pulp processing — including pressure digestion and water chlorination. A problem, which was never successfully overcome, was that while the process was based upon the production of soda and chlorine by electrolysis from common salt, and it was thought, from laboratory experience, that the chemical consumptions could be so balanced as to enable all the chemicals to be consumed in the stoichometric proportions produced by the cells, in practice it was found that the caustic soda consumption was always more than was expected. This threw the process out of balance. The old batch type pressure digesters used were unsuitable for straw cooking, and evenly cooked pulp was difficult to obtain. Apart from this question, the problem of pre-cleaning the straw and of economically washing and screening the pulp had not been adequately solved in those days.

Dr. Pomilio, who had installed De Vains electrolytic cells at his Naples chemical plant, began in the early 1920's to study the problem on completely new lines. The result was the construction throughout the world of a series of new mills which, as already stated, were the only successful new mills built for making fine papers from cereal straws during that period. The new methods of continuous low pressure digestion and high density gas chlorination overcame many of the problems associated with the older plants.

It is significant that each of the Pomilio mills made profits and is still in existence and successful operation — with the exception of the mill at Naples, Italy, which was destroyed by the R.A.F.

The first mill to be constructed in 1929-30 was that of the Celulosa Argentina S.A. at Rosario. This mill, which was originally designed for an output of 10 tons per day of cereal straw pulp, now has a plant capacity of 100 tons of straw pulp per day, and has become one of the biggest and most successful enterprises in the Southern Hemisphere. Smaller quantities of bamboo pulps are made by the sulphate process and some bagasse and pine pulps are also made.

A substantial and important chemical industry has also been developed as a side line, both in this and other Pomilio plants.

The continuous digesters, which gradually eliminated the problems experienced with the old batch cookers, were developed in Argentina, and also the method of high density gas chlorination in continuous towers. These early plants were of a rather crude but effective type and some of the original towers are still in operation in different parts of the world.

A second plant was installed at the mill of Compania Manufactura de Papeles y Cartones, Chile. This plant replaced the earlier De Vains unit, and was designed and started under the supervision of Dr. G. Raimondo, who had previously been in charge of the Rosario plant. The original Pomilio straw pulp plant, started in 1932, is still in operation there.

The Fabrica Nacional De Papel, Montevideo, was the next mill to follow suit in South America. They now have a straw pulping capacity of about 24 tons per day, and have recently started a new Sandy Hill paper machine.

Further developments took place in Europe, and four new Pomilio soda-

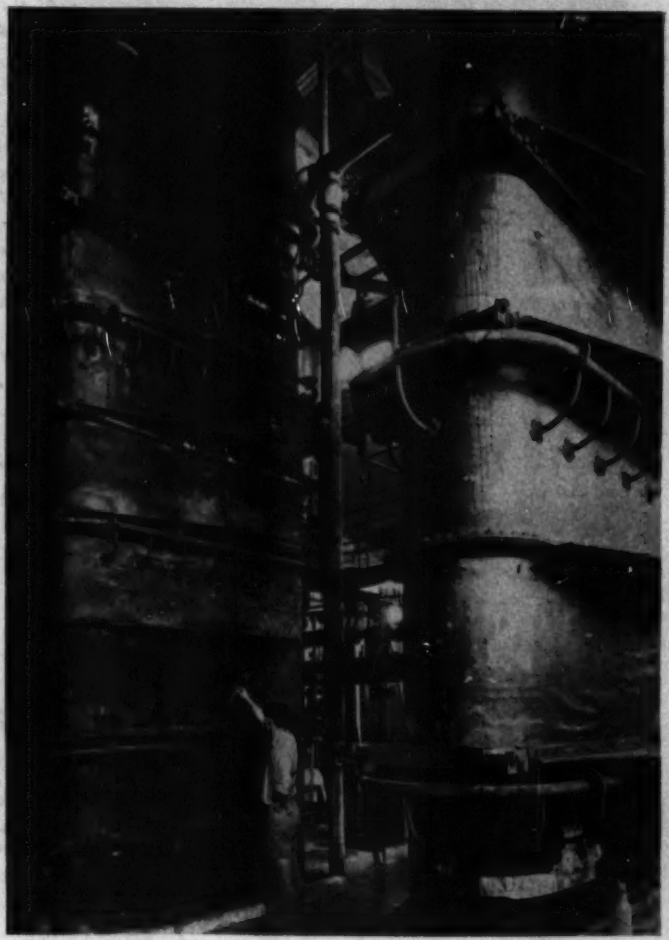

Figure 2—The first continuous pulp digesters installed in 1932. "Some of these are still in operation in different parts of the world".

Color Matching Service

The General Dyestuff Corporation's Quick Color Matching Service is tuned to meet today's needs. Color matches are mailed to you the same day your request is received formulas sent by wire or telephone at your request. We invite you to take advantage of our Quick Color Matching Service.

GENERAL DYESTUFF CORPORATION

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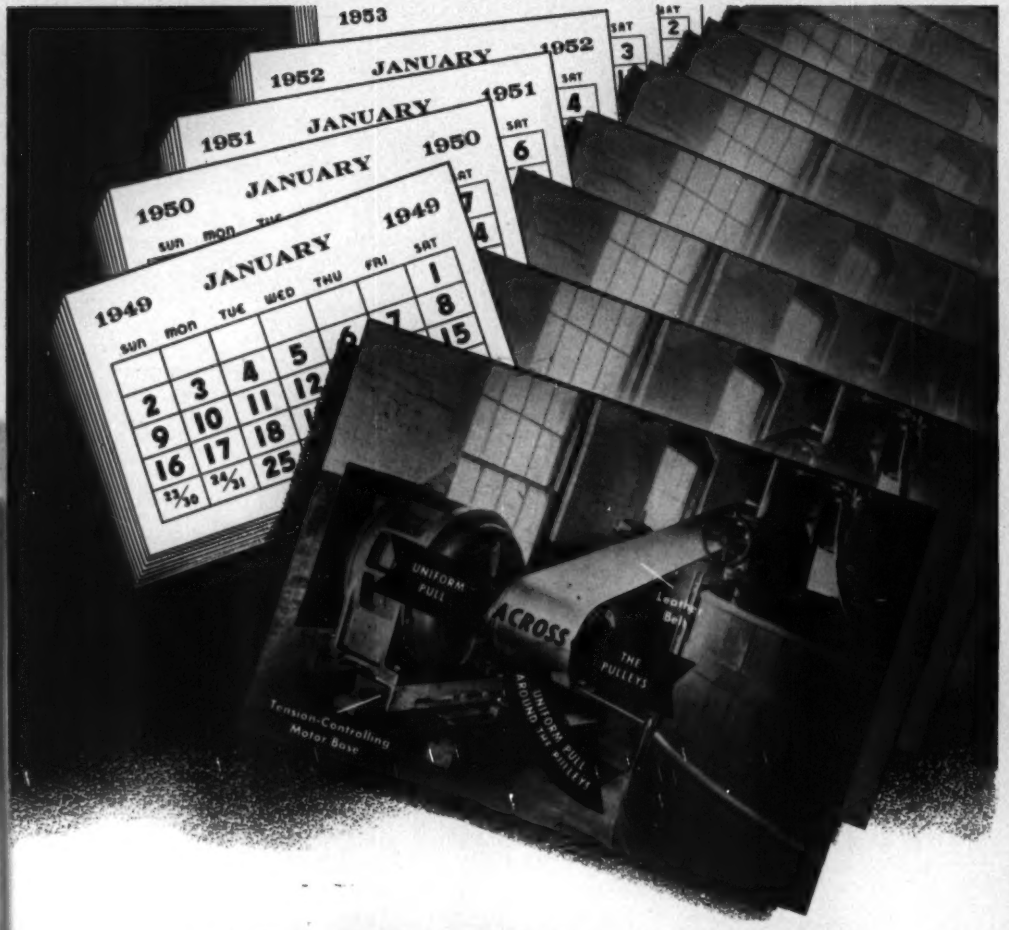

WHY UNI-PULL SERVICE IS MEASURED IN "HORSEPOWER YEARS"

The new Uni-Pull drive is a short center drive that's engineered for a longer service life. With waterproofed leather belting on the pulleys, it can give years of efficient performance, putting horsepower to work in your mill.

There are two basic reasons why.

1. **THE BELT.** The waterproofed, flat leather belt provides *uniform pull across the pulley faces.* No danger of separate, uneven tensions. The belt forms one, wide, undivided power path from pulley to pulley.

Then too, remember that quality leather belting has an inherent, natural shock-cushioning capacity not found in any substitute material.

2. **THE BASE.** The tension-controlling motor base assures *uniform pull around the pulleys* at all times. It maintains proper tension, despite changes in load. That makes life easier and *longer* for both belt and bearings.

For modern, longer-lasting power transmission in your paper mill, use the Uni-Pull drive with waterproofed leather belting.

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Figure 3—Manila 1950. "The new city emerging from the ruins of the old".

chlorine bleached straw pulp plants were constructed in Italy at Naples, Chieti, Castel Raimondo and Foggia. Dr. Raimondo, who had meanwhile been in charge of the Foggia plant, went to South Africa and designed and erected for a gold mining group a new mill near Johannesburg, which started operating in 1938. This two-machine mill was designed to produce 12 tons of soda wood pulps and 24 tons of bleached straw pulp per 24 hours, and operated successfully throughout the war and provided South Africa with its paper requirements using well over 100,000 tons of straw in the process. Unfortunately, as the cereal crops failed year after year in the Orange Free State, and droughts occurred in the Transvaal, it was necessary to convey most of the straw used 1,000 miles by rail from the Cape to Johannesburg. In spite of the heavy freight charges thus incurred, the mill throughout the war made paper and good profits at the controlled paper prices which were much lower than those of the corresponding imported qualities. Under the more normal conditions following the war, the 1,000 mile haul on Cape straw rendered this bulky raw material uncompetitive and since abundant supplies of short-fibred hardwoods were very cheaply available from the eucalyptus and wattle mining-timber plantations of the Transvaal, the pulp plant was converted for the making of short-fibred soda wood pulps and the use of straw was abandoned. The mill's Giordani-Pomilio electrolytic plant produces nearly all the chlorine and much of the caustic soda required in the Union.

This is the only instance of a soda-chlorine straw plant having ceased using straw in favor of other raw materials, and the circumstances again emphasize the importance of a careful study of the market and supply position before choosing the site for, and erecting, a pulp and paper plant.

One of the most significant developments during the pre-war period was the construction of the world's first—and only—mill for the manufacture of fine pulp and paper from bagasse, in the Philippines, on the Island of Negros. In addition to the Pomilio continuous pulp producing equipment, this mill includes Noble and Wood beaters and a very nice, small Pusey & Jones paper machine.

From its first start-up this mill made—and had no difficulty in selling—high quality, white, bank and bond papers, using 95 percent bagasse fibre as raw material. As there is no tariff on imported paper from the U.S.A., this small plant—which has a capacity of only 15 tons a day—has had to face the full competition of American imports, and thus its papers have had to be sold in competition, both on quality and price, with the corresponding American papers. It is interesting and important that it has proved possible for such a small mill to make progress in this unprotected market. The only raw materials required, bagasse and salt, are locally available, but fuel oil has to be imported.

Figure 4—Manila 1950.

The mill is controlled by what is perhaps the best known company and one of the biggest sugar producers in the Islands, the Cia. General de Tabacos de Filipinas (Tabacalera), of Manila and Barcelona.

It was a memorable experience to visit Manila in March of this year and to see the new city emerging from the ruins of the old, which evidently was as completely destroyed during the war as Berlin.

My friends in Manila told me that more than 20 percent of their staff perished during the war years, and about 100,000 people died in Manila.

While the papermill has now got into its stride again, conditions are not yet normal in this Christian country, and government troops are fighting in the mountains against the Communists—known in the Philippines as the Huk-balahaps.

Other bagasse pulp and paper mills will be constructed in the Philippines, but at present one of the best sites for a mill cannot be considered, as the Communists are in control of the water supplies.

This is just another, if perhaps unusually forcible, reminder of the relevance of the "war of ideas" to the pulp and paper industry.

Recent reports in the American press that "newsprint paper" had been made from bagasse "for the first time" in an experimental run on a small slow speed machine were met with a certain feeling in the Philippines Press, which pointed out that not only newsprint

Figure 5—The "Caldecor" Pilot Plant and Research Laboratories at St. Paul's Cray, Kent 1940. "Hitler" very kindly dropped a bomb."

but the highest grades of bank and bond papers made from bagasse were in full commercial production at higher speeds in the Philippine Islands ten years ago.

Dr. Joseph E. Atchison of the Economic Cooperation Administration also recently pointed out that *The Baltimore Advocate* was printed on bagasse paper in 1865, and *The Philadelphia Public Ledger* as well as *The New Orleans Daily Picayune* also published bagasse paper editions in the 1870's.

While these pulping developments were in progress overseas, in Europe headway had been made in Germany and Italy with the production of straw pulps by the neutral sulphite processes. The neutral sulphite process, which can produce a good and strong though rather hard pulp, has the great advantage that it can be installed and operated with little new equipment in an existing mill, and a good many small mills in Italy and Germany and other parts of Europe have operated it for many years. It may be interesting to note here that it seems that none of these mills (several of which have discussed the problem with my company) has yet succeeded in producing marketable pulps in quantity with the very low chemical consumptions and high yields which were reported in the recent most interesting reports on laboratory work published by Drs. Aronovsky and Lathrop of Peoria.

Straws vary enormously, not only in fibre content, but in the proportions of weeds, etc., that they contain, so that results obtained on a small scale from, for example, clean, winter-sown American wheat straws, may not be comparable with those obtained in large scale production from weedy spring-sown European or other varieties.

Holland has for many years had the reputation of being the one country in the world which has developed the use of straw for paper making but, in actual fact, nearly all the straw used in Holland was used in the making of strawboard. However, for very many years one small mill has been making very nice bleached pulp by the sulphate process. This pulp, prior to the war, was largely exported and commanded on the world's export markets a higher price than sulphite wood pulp.

In 1938 my own company was established to investigate the technical and engineering sides of the existing processes for the making of straw pulp. As it was clear that the Pomilio continuous soda-chlorine process was being more widely used throughout the world than any other, right from the start it was decided to concentrate upon improving and developing this process, which, to a large extent, already overcame many of the difficult problems associated with the older batch methods of pulp treatment.

In order to deal with the matter in a practical manner, we built a complete small scale experimental mill alongside the paper mill of Messrs. William Nash Ltd., at St. Paul's Cray, near Orpington in Kent. Colonel William Nash, whose family has been in control of the paper mill for nearly 100 years, was one of the people primarily responsible for the project. At a time when imported wood pulp was plentiful and cheap, he foresaw that, from a long term point of view, if the world's paper requirements were to be met, the use of agricultural residues, grasses, etc., for paper making, would have to be developed. In 1940, just as the pilot plant was ready to start up, Hitler very kindly dropped a bomb which made a nice mess of the plant and laboratories, but it was quickly rebuilt.

One of the best equipped technical laboratories in Britain was installed, and throughout the war years we concentrated upon investigating and dealing with the problems connected with the making of really high grade papers from straw.

During the war years, Britain was cut off from European supplies of pulp, and apart from two small wood pulp mills, the only pulp plants in the country were those belonging to 40 esparto mills. Esparto grass was, of course, unobtainable, and straw was soon the only raw material available. In a way, it was fortunate for us that throughout the war years the experience of these 40 mills, in endeavoring to make satisfactory papers with orthodox plant by the soda and sulphate processes, was available to us

One hears stories of the difficulties caused by the presence of silicates in the straw black liquor in the soda recovery plants and one inventor proposes to add large quantities of lime to the black liquor to precipitate the silica, another proposes the addition of lime, not to precipitate the silica, but to causticize the black liquor without having to bother with a recovery plant. In actual practice, however, the Scottish esparto mills experienced no more trouble from silica in the straw black liquor than was normally experienced when using esparto. The difficulty they did have with recovery was due to the low organic/inorganic ratio in the black liquor as, owing to the inadequate equipment available, they had to use 25 to 30 percent caustic on the weight of the straw to produce a usable pulp. The average yield reported in these plants was only 28 percent. The pulp made was very wet, and it was impossible to wash it with the simple equipment which was available, and the liquor recovered was thus very dilute.

Although some very nice papers were made, the economics of their production were such that as soon as esparto grass became available at the end of the war, the use of straw was largely discontinued, and esparto imports were resumed, even though the cost of the grass rose as high as £16 per long ton. This experience is an illustration of the fact that in order to produce good quality pulps from agricultural residues, it is necessary to install plant which has been designed specifically for the purpose. The poor results obtained were not primarily due to the process used, but to the inadequate equipment employed. There are many situations where, due to effluent problems, the soda process is the only possible process to use if straw pulp is to be made at all, and with properly designed equipment the process can be operated economically in many places.

Owing to the great shortage of im-

Figure 6—The "Caldecor" Pilot Plant and Research Laboratories at St. Paul's Cray Kent after rebuilding in 1941.

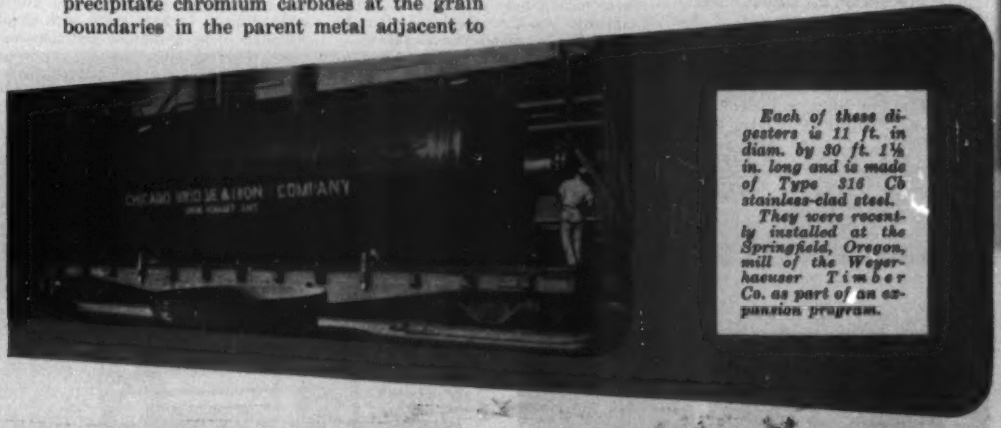
Columbium alloy stainless used in Weyerhaeuser Digesters

... to overcome intergranular corrosion near welds

Both of the digesters shown on this page are made of type 316 Columbium 15 per cent stainless-clad steel. They are part of the equipment the Weyerhaeuser Timber Company recently installed to increase the pulp producing capacity of its Springfield, Oregon, mill from 150 to 250 tons per day.

Columbium alloy was used to eliminate the reduction in corrosion resistance that often exists near the welds in alloy steels. Unstabilized stainless alloys have a tendency to precipitate chromium carbides at the grain boundaries in the parent metal adjacent to the weld. As a result, the chromium content of this region near the weld is reduced—and the metal is less able to resist the attack of corrosive cooking liquors. Columbium is a "stabilizing element" that retards carbide precipitation—and thereby improves corrosion resistance.

These clad digesters are examples of the special equipment we build for industry. We also fabricate and erect flat-bottom tanks, elevated water tanks, reservoirs and many other steel plate structures. Write our nearest office for information or quotations.



Each of these digesters is 11 ft. in diam. by 30 ft. 1½ in. long and is made of Type 316 Cb stainless-clad steel. They were recently installed at the Springfield, Oregon, mill of the Weyerhaeuser Timber Co. as part of an expansion program.

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New York 6.....3333-165 Broadway Building
Philadelphia, 3..1668-1700 Walnut Street Building
Salt Lake City, 4.....567 West 17th South Street
San Francisco, 6.....1577-200 Bush Street
Seattle, 1.....1360 Henry Building
Tulsa, 3.....1646 Hunt Building
Washington 6, D. C.....1146 Cafritz Building

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE

In Canada: HORTON STEEL WORKS, Limited, FORT ERIE, ONT.

ported pulp after the war, the Wall Paper Manufacturers Ltd. of Radcliffe, Lancashire, purchased a government factory containing 16 big rotary digesters, and we have installed much specialized equipment in this plant which, when in full operation, is expected to produce 100 tons a day of good quality pulp by the soda process. It will be possible to produce finished bleached straw pulp at a good deal lower figure than the current cost of production for esparto pulp.

During the war years, and right up until the present time, owing to government restrictions, it has been extremely difficult to obtain building licenses for new extensions to plant, but it was possible for us to help many of the mills in Britain to improve their pulp quality by the installation in one case of a complete continuous high density gas chlorination unit, and in other cases by the installation of cutting, pre-cleaning, pre-soaking and screening equipment. While the war was still in progress, the Bowater Paper Corp. installed a continuous digester of the new type developed at our pilot plant, and this digestion tower has for the last 5 years been producing about 35 tons per day of pulp of the best quality corrugating paper produced in Britain. The capacity of this particular unit is now being extended to 70 tons a day, and a complete plant for the production of bleached straw pulp by the continuous process is also being installed.

With regard to the economics of this method of pulp production, it is interesting to note that the only raw materials required for bleached pulp are approximately 0.4 tons of salt per ton of pulp, and about 2.2 tons of clean straw or bagasse. Owing to the continuous processing, the steam consumption is less than one quarter of that which was reported by the Scottish soda pulp mills during the war, and to operate a complete bleached pulp plant only 3 men and a foreman are required in the pulp mill. The yield of finished pulp on the weight of dry material fed into the pulp digester, whether bagasse or straw is used, varies from 43 percent to 50 percent, depending upon the quality of the original raw material used. The power consumption also is moderate, and owing to the low first capital cost (when compared with the older processes), it is possible for quite small plants to produce pulp at a cost comparable to that shown by the world's much larger wood pulp mills. It is for this reason that a firm such as Bowater's can consider installing a plant at the low rated capacity of 1 ton an hour. The cost of production in a plant in the United States at the present time, for instance, should be well below $60 per short ton ex works, provided a site is chosen where salt, power and straw or bagasse are available at reasonable prices. There are few places in the world better situated in this respect than some of the American states.

In France, where the estimated quantity of straw produced each year is 20 million tons, three mills are installing continuous plants.

One of these has just started up and all three of them will eventually produce bleached pulp; in the early stages the straw pulp produced, totalling approximately 150 tons per day, will be used with kraft pulp in the making of bag paper and good quality wrappings, etc. One of the plants near Paris will be developing the idea of the production of high yield bleached straw semi-pulp for use in newsppprint and similar qualities.

In Holland, in addition to a small continuous unit being installed for treating seed flaw straws in one mill, a 40 ton-per-day bleached straw pulp plant is being erected in a huge building put up during the war under the German occupation, by a subsidiary whose parent firm is the Dutch Enka Company. Another Celdecor-Pomilio scheme is also under consideration.

The first completely new pulp and paper mill to be ordered, completed and put into operation in any part of the Old World after the war, was started up 16 months ago at Baba-Ali in Algiers. This Celdecor-Pomilio plant is now making about 35 tons per day of high grade white papers, using only straw and esparto grass as raw materials. The whole plant is continuous from one end to the other. From the time the straw and grass are fed into the cutters, the stock never stops moving until it is reeled up at the end of the paper machine. There is no manhandling or batch processing at any stage. This is the first modern paper mill to be built on the North African coast. The electrolytic plant alongside forms the basis for a new chemical industry for the country, and the project had a good send-off when the French President visited it at the start-up.

Encouraged by the success of the Philippines plant, referred to above, the Dalmia Jain organization in India is now completing a plant for the production of 24 tons per day of bleached bagasse pulp by the continuous soda chlorine process, which plant will be installed alongside their existing sulphate bamboo mill at Dalmianager. Another plant is being constructed at a sugar mill in the south of India, and the Refinadora Paulista in Brazil are building a complete pulp and paper mill in Sao Paulo, which also will use bagasse as raw material, and should be in operation within one year. This latter plant will make the highest grades of printings, writings and book papers using only salt and bagasse as raw materials. Another continuous plant is being installed in Brazil which will make 30 tons a day of good quality wrapping paper pulp from rice straw, and a third unit is being shipped from Britain for corrugating paper production.

Inventors of "new processes" for making pulp and paper from straws and residues are legion, and we find it quite difficult to keep pace with them. All sorts of permutations and combinations of the sulphate process are being put forward by different proponents, and all types and varieties of the sulphite process are also being propagated, ranging from the neutral sulphite right

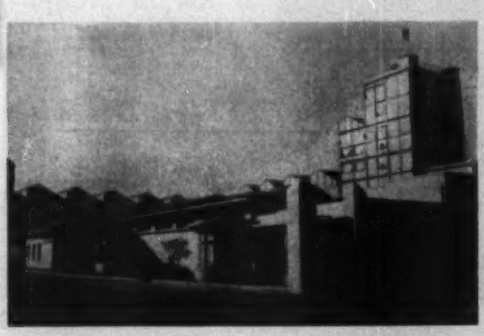


Figure 7—Cie. Nord Africaine de Cellulose, Baba-Ali, Algiers. The first completely new postwar pulp and paper mill to be built in the old world.

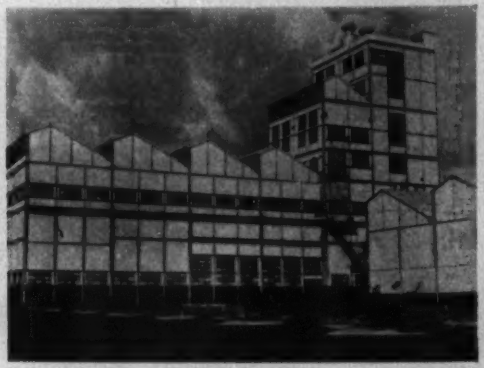


Figure 8—The Celdecor-Pomilio continuous pulp plant building. Cie. Nord Africaine de Cellulose Baba-Ali, Algiers. "No batch processing at any stage".

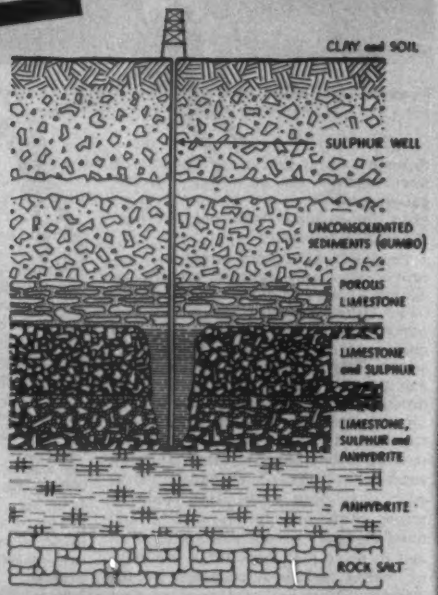
SULPHUR

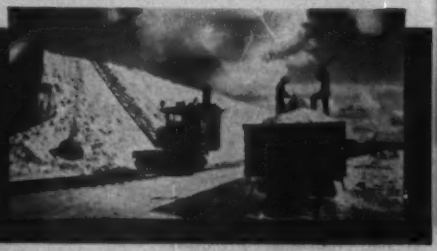
*Interesting Facts Concerning This Basic Raw Material from the Gulf Coast Region

*DEPOSITS . . .

Practically all of the elemental sulphur used in this country comes from mines in Louisiana and Texas.

There, the sulphur deposits occur in the cap rock overlying certain salt domes. The sulphur is mined at depths of 300 to 2,000 feet below the surface. It is melted in place by pumping into the deposit water heated under pressure to a temperature above the melting point of sulphur. The melted sulphur flows away from the limestone and is pumped to the surface where it is allowed to solidify in vats. By such means sulphur nearly 100% pure is produced.





Loading operations at our Newgulf, Texas' mine

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Figure 9—Paper making fibre in the form of sugar cane entering the factory at Dalmianagar, India.

Figure 10—A typical South Indian sugar mill.

through to acid processes. The use of nitric acid has also been under investigation, and there are at least 3 processes for making straw pulp by bacteriological means.

Proposals have been made to "improve" the soda-chlorine process by adding a couple of extra cooking stages to it. Other inventors have added (on paper) extra chlorination stages and chains of screw presses working in series. During the war we examined one process which, on a small scale, produced quite passable pulp by cooking the straw with water without any chemicals at all. It has been proposed to drag whole bales of straw through successive baths of chemicals or to cook it in open tanks, Hydrapulpers, screw conveyors, towers, rotary and fixed digesters or not to cook it at all and to leave it to soak for a few days or weeks in vats or holes in the ground. Various gentlemen appear from time to time with "secret chemicals" which rarely will stand up to impartial investigation.

We have investigated processes which claimed that the use of wetting agents produced remarkable results in the digestion stage but, hitherto, where control tests have been made, with and without, wetting agents in the cooking stage, it has been difficult to detect much difference, and inventors are liable to forget that black liquor itself is an excellent wetting agent.

A point which is often forgotten with many of these schemes, is that straws and grasses are among the oldest paper making materials. During the war it was reported that over 100,000 people were making paper by hand from rice straw and bamboo in China in ruined temples and caves. The major problem in making paper from these raw materials is no longer to find "a process." The possible processes are legion. The real problem which has had to be solved has been the practical development and solution of the engineering and production problems, so that really snow-white spotlessly clean paper, equal in all respects, and superior in many, to wood pulp papers, can be economically produced on a large scale by the established processes. In our own case we expended on engineering research and practical experience, the equivalent of $600,000 before we were able to reach this point in large scale production.

All this must be very confusing to the uninitiated, and it sometimes seems a pity that all the energy and enthusiasm which is put into the development of "new processes," most of which are doomed to failure because they are not new at all, cannot be diverted to the job of putting up the mills, because that is what is wanted if the democratic world's requirements of paper and pulp are to be met.

Foreign Literature Abstracts

No. 11—"Paperi ja puu. Papper och Tva"

"Investigation of Fusel Oil Obtained in the Production of Alcohol from Sulphite Waste Liquor," Waldemar Jonsson, Dr. Techn., The Institute of Wood Chemistry, Abo Akademi, Abo, Finland.

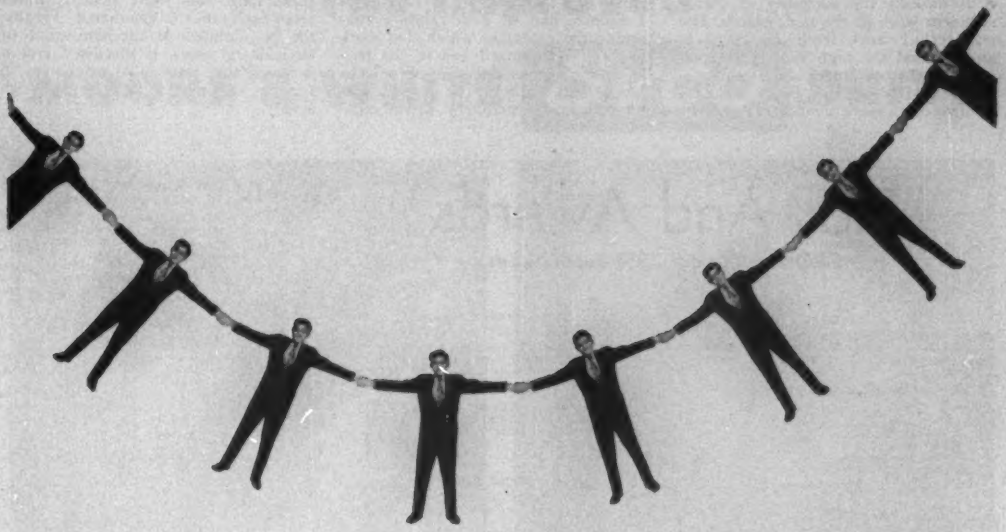
The author has investigated fusel oil obtained in the production of alcohol from sulphite waste liquor. A new constant boiling fraction, b. p. 129°C. at 15 mm Hg, 146.5°C. at 32 mm Hg and 249.8—250.5°C. at atmospheric pressure, was isolated by distillation using a spinning band column (1). The fraction was shown to be an azeotropic mixture containing as one component 1-n-propyl-3-methoxy-4-hydroxybenzene, which was identified by means of its 3,5-dinitrobenzoate. There is probably in the fraction another component of similar structure. The investigation is being continued.

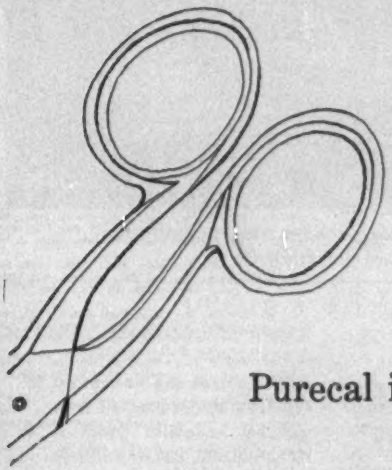
"Actual Problems in the Swedish Sawmilling Industry," C. F. Kastmark, Civil Engineer, technical manager of the mechanical wood working department of Korsnas AB, Sweden. Presented before the joint meeting of the Finnish Sawmillmen's Association and the Finnish Woodworking Engineers' Association on March 31, 1950.

The author discusses actual problems in the Swedish sawmilling industry, which in many respects are similar to those in our country. He describes the barking problem taking first into consideration the barking places, either in forest, at storing places or at mills. He mentions the barking machines now in use in Sweden and criticizes the results obtained in mechanical barking. After this he moves over to deal with the modernizing work carried out at the mills of Korsnäs AB in Sweden.

"Review on the Use of Machinery in Forestry," Kalle Putkisto, Master of Forestry; "Metsateho"—The Forest Works Studies' Section of the Central Association of Finnish Woodworking Industries, Helsinki.

This article deals with the subject mentioned in the heading, especially from the viewpoint of Finland's forestry. It commences by explaining the difficulties of mechanization. Forest-owning conditions, the method of felling and the relatively small size of the trees are responsible for the fact that





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it is difficult for machines to obtain sufficient work at the same places. The transfer of work from one point to another and the high rate of interest increase the working costs of the machines. Afterwards, a short summary is devoted to work connected with the felling and transport of various kinds of timber, and to a description concerning the extent to which that work has been mechanized and to the possibilities of increasing the use of machinery still further. The good results obtained from machinery which separates long and short floated timber from each other is mentioned. Finally, the possibilities of mechanization of silvicultural work is discussed and it is stated that the use of machinery in forestry continues to increase, although slowly.

Bids And Awards

GPO 2nd Quarter, 1951 Paper Needs

Newsprint

No. 1—1,900,000 lbs., 24x36—64; rolls, 19, 24, 36, and 48 ins. wide, 36 inches in diameter (3-inch fibre cores); min. order, 40,000 lbs.

Machine-Finish Book

No. 3—1,500,000 lbs., 25x 38—70; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 40,000 lbs.
- * Mudge Paper Co. (500,000 lbs. only) ..... .1403c
- * Walker Goulard Plehn Co. (400,000 lbs. only) ..... .1453c

No. 7—500,000 lbs., 25x38—70; rolls, 19, and 38 ins. wide, 36 ins. in diameter (3-inch fiber cores); min. order, 40,000 lbs.
- Barton, Duer & Koch Paper Co. . .1015c
- * Wilcox, Walter Furlong Paper Co. .1097c
- Mudge Paper Co. ..... .1317c
- Walker Goulard Plehn Co. ..... .1346c
- Mead Sales Co. ..... .11c

No. 9—250,000 lbs., 25x38—70; rolls, 24, 36, and 48 ins. wide, 36 ins. in diameter (3-inch fiber cores); min. order, 40,000 lbs.
- Barton, Duer & Koch Paper Co. . .1015c
- * Wilcox, Walter Furlong Paper Co. .1097c
- Mudge Paper Co. ..... .1317c
- Walker Goulard Plehn Co. ..... .1346c
- Mead Sales Co. ..... .11c

English-Finish Book

No. 10—220,000 lbs., 25x38—90; flat, cut any size, min. width 24 ins., max. width 48 ins., max. length 56 ins.; min. order, 20,000 lbs.

Machine-Finish Book End Paper

No. 17—30,000 lbs., 25x38—160; flat, cut 38x50 ins.; min. order, 20,000 lbs.

Offset Book

No. 18—300,000 lbs., 25x38—80; flat, cut any size, min. width 24 ins., max. width 48 ins.; the grain to run lengthwise of the sheet; min. order, 40,000 lbs.

No. 19—4,300,000 lbs., 25x38—100; flat, cut any size, min. width 24 ins., max. width 48 ins.; the grain to run lengthwise of the sheet; min. order 40,000 lbs.
- Whitaker Paper Co. ..... .1265c

No. 20—300,000 lbs., 25x38—120; flat, cut any size, min. width 24 ins., max. width 48 ins.; the grain to run lengthwise of the sheet; min. order, 40,000 lbs.
- Whitaker Paper Co. ..... .1265c

Antique Book

No. 21—40,000 lbs., 25x38—90; flat, cut 32x42, and 38x50; min. order, 40,000 lbs.
- * Stanford Paper Sales Corp. ..... .1326c

No. 22—60,000 lbs., 25x38—120; flat, cut 32x42, 38x48, and 38x50 ins., min. order, 20,000 lbs.
- * Stanford Paper Sales Corp. ..... .1326c

50% Antique Book

No. 26—90,000 lbs., 25x38—80; flat, cut 32x48 and 35x45 ins.; min. order, 40,000 lbs.

No. 27—30,000 lbs., 25x38—60; shall be suitable for writing on with ink, flat, cut 22¾x31 ins.; min. order, 30,000 lbs.
- * Wilcox, Walter Furlong Paper Co. .2497c

50% Laid Antique Book

No. 29—20,000 lbs., 25x38—140; flat, cut 38x48 ins.; the laid marks to run the 38-inch direction of the sheet; the grain and chain marks to run lengthwise of the sheet; min. order, 20,000 lbs.

Water Resistant (Test) Book

No. 30—380,000 lbs., 25x38—120; flat, cut 32x42 and 35x45 ins.; min. order, 40,000 lbs.
- * Stanford Paper Sales Corp. ..... .1906c

Supercalendered Book

No. 32—200,000 lbs., 25x38—90; flat, cut any size, min. width 24 ins., max. width 48 ins.; min. order, 40,000 lbs.
- * Mudge Paper Co. ..... .1365c

No. 33—300,000 lbs., 25x38—90; rolls, 28½ and 38 ins. wide, 36 ins. in diameter (3-inch fiber cores); min. order, 40,000 lbs.
- Barton, Duer & Koch Paper Co. . .986c
- * R. P. Andrews Paper Co. ..... .833c
- Mudge Paper Co. ..... .1285c
- Mead Sales Co. ..... .1110c

Coated Book

No. 34—1,160,000 lbs., 25x38—100; flat, cut any size, min. width 24 ins., max. width 48 ins.; min. order, 40,000 lbs.
- * Barton, Duer & Koch Paper Co. . .1280c
- Frank Parsons Paper Co. ..... .1190c

No. 35—380,000 lbs., 25x38—120; flat, cut any size, min. width 24 ins., max. width 48 ins.; min. order, 40,000 lbs.
- Barton, Duer & Koch Paper Co. . .1280c
- * R. P. Andrews Paper Co. ..... .1187c
- Frank Parsons Paper Co. ..... .1190c

No. 36—240,000 lbs., 25x38—100; rolls, 28½ and 38 ins. wide, 36 ins. in diameter (3-inch fiber cores); min. order, 40,000 lbs.
- * Barton, Duer & Koch Paper Co. . .930c

No. 38—150,000 lbs., 25x38—140; flat, cut 32x42, 38x48 and 39x50 ins. and 42x64 ins.; the grain to run lengthwise of the sheet; min. order, 40,000 lbs.
- Stanford Paper Sales Corp. ..... .1672c

Goldenrod Coated Book

No. 37—4,000 lbs., 25x38—160; flat, cut 38x50 and 42x58 ins.; min. order, 2,000 lbs.
- * Mudge Paper Co. ..... .2125c
- Walker Goulard Plehn Co. ..... .2087c

Litho Coated Book

No. 41—100,000 lbs., 25x38—140; flat, cut 32x42, 35x45, 38x48, 39x50, and 41x52 ins.; the grain to run lengthwise of the sheet; min. order, 40,000 lbs.
- Stanford Paper Sales Corp. ..... .1752c

Dull Coated Book

No. 42—20,000 lbs., 25x38—140; flat, cut 32x42 and 38x48 ins.; the grain to run lengthwise of the sheet, min. order, 20,000 lbs.

Ground Wood Mimeograph Paper

No. 43—150,000 lbs., No. 40, flat, cut 32½x42½ ins.; the grain to run lengthwise of the sheet; min. order, 40 000 lbs.
- Frank Parsons Paper Co. ..... .984c

Chemical Wood Mimeograph White and Colored

No. 44—900,000 lbs., white, No. 40. Flat, cut 28½x34½, 32½x42½, 38x48½ ins. Grain size 28½x34½ ins., to run the 28½ inch way; size 32½x42½ to run the 42½ inch way; size 38x48½ ins. to run the 38 inch way; min. order, 40,000 lbs.
- * Barton, Duer & Koch Paper Co. . .1275c
- Whitaker Paper Co. ..... .13c

No. 45—70,000 lbs., blue, buff, green, pink and yellow, No. 40. Flat, cut 32½x42½, and 38x48½ ins. Grain: Size 32½x42½ ins. to run the 42½ inch way; size 38x48½ ins. to run the 38 inch way. Min. order, one color, 10,000 lbs.

25% Mimeograph

No. 46—500,000 lbs., No. 40; flat, cut 28½x34½, 32½x42½, 38x48½, and 40½x42½ ins. Grain: Size 28½x34½ ins. to run the 28½ inch way; sizes 32½x42½ and 40½x42½ ins. to run the 42½ inch way; size 38x48½ ins. to run the 38 inch way; min. order, 40,000 lbs.
- * Howard Paper Mills (100,000 lbs.) ..... .2094c

Duplicator Copy Paper Liquid Process, White and Colored

No. 47a—300,000 lbs., white; No. 40; flat, cut 32x42, 34x44 and 40x52½ ins.; the grain to run lengthwise of the sheet; min. order, 40,000 lbs.
- * Walker Goulard Plehn Co. ..... .1735c

No. 47b—90,000 lbs., pink, yellow, green and blue. No. 40; flat, cut 32x42, 34x44 and 40x52½ ins.; the grain to run lengthwise of the sheet; min. order, 20,000 lbs.

Chemical Wood Writing White and Colored

No. 51—130,000 lbs., white, No. 26; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 40,000 lbs.

No. 52—2,850,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 40,000 lbs.
- * R. P. Andrews Paper Co. (1,800,000 lbs.) ..... .1249c
- * R. P. Andrews Paper Co. (350,000 lbs.) ..... .1410c
- * Mudge Paper Co. (200,000 lbs.) ..... .1416c
- * Whitaker Paper Co. (300,000 lbs.) ..... .1360c

No. 53—5,000,000 lbs., white, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 40,000 lbs.
- * Barton, Duer & Koch Paper Co. (500,000 lbs.) ..... .1305c
- * R. P. Andrews Paper Co. (180,000 lbs.) ..... .1191c
- R. P. Andrews Paper Co. ..... .1191c
- * Mudge Paper Co. (200,000 lbs.) ..... .1350c
- * Whitaker Paper Co. (500,000 lbs.) ..... .13c

No. 54—500,000 lbs., white, No. 32. Rolls, min. width 16 ins., max. width 48 ins., 36 ins. in diameter (3-inch fiber cores); min. order, 40,000 lbs.
- * R. P. Andrews Paper Co. ..... .1102c
- Mead Sales Co. ..... .1250c

No. 55—400,000 lbs., white, No. 40. Rolls, min. width 16 ins., max. width 48 ins., 36 ins. in diameter (3-inch fiber cores); min. order, 40,000 lbs.
- * Mead Sales Co. ..... .1190c

No. 56—50,000 lbs., blue, buff, green, pink, salmon and yellow, No. 26, flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 10,000 lbs.

No. 57—440,000 lbs., blue, buff, green, pink, salmon and yellow, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, one color, 10,000 lbs.

No. 58—380,000 lbs., blue, buff, green, pink, salmon and yellow, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, one color, 10,000 lbs.

No. 59—40,000 lbs., yellow, No. 32, rolls, 38 ins. wide, 36 ins. in diameter (3-inch fiber cores); min. order, 20,000 lbs.
- * Mead Sales Co. ..... .1350c

No. 60—40,000 lbs., white, No. 32; rolls, 36-in. wide rolls, 36 ins. in diameter (3-inch fiber cores); min. order, 40,000 lbs.

No. 61—100,000 lbs., No. 24; rolls, 22 ins. wide, 34 to 36 ins. in diameter (3-inch fiber cores); min. order, 40,000 lbs.

No. 62—20,000 lbs., white, No. 30; rolls, 22 ins. wide, 34 to 36 ins. in diameter (3-inch fiber cores); min. order, 20,000 lbs.
- * Mead Sales Co. ..... .1275c

No. 63—20,000 lbs., blue, green, pink, yellow, buff, cherry and salmon, No. 24, rolls, 22 ins. wide, 34 to 36 ins. in diameter (3-inch fiber cores); min. order, one color, 10,000 lbs.

White Chemical Wood Writing

No. 64—40,000 lbs., No. 32; rolls, 38 ins. wide, 36 ins. in diameter (3-inch fiber cores); min. order, 40,000 lbs.

50% Lithograph-Finish Map

No. 70—20,000 lbs., No. 32. Flat, cut any size, min. width, 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet; min. order, 10,000 lbs.

No. 71—20,000 lbs., No. 40. Flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet; min. order, 10,000 lbs.
- * Barton Duer & Koch Paper Co. . .3010c

High Wet Strength Map

No. 78—850,000 lbs., No. 48; flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain

The improved

MOORE & WHITE *Syco* DRIVE

Photographs show a paper making set-up before and after installation of Moore & White Syco Drive. (Name of mill upon request.)

Primarily, this modern mechanical paper machine drive assures you:

- ***Increased production from your present paper machines***
- ***A more uniform, quality sheet at lower machine cost***

Scarcely less important are these vital profit and efficiency factors:

- ***A saving of up to 50 percent of usable floor space***
- ***Lowered power consumption***
- ***Sharply reduced maintenance costs***
- ***Greater safety to machine operators***
- ***Greater cleanliness that will promote good housekeeping***

Syco gives you a "clean" mill, free from overhead shafts, pulleys, idlers, countershafts and belts, guards for belts and gears, superstructure, ladders, and catwalks. There is no drive equipment above or below the floor level. Syco is easily installed and serviced by competent mechanics.

The compact Moore & White Syco Drive is simple in its expertly engineered design; precision-built and automatically lubricated for efficient, trouble-free, round-the-clock operation. It precisely synchronizes sectional speed, preserving uniform tension on the sheet at all times. Fingertip micro-adjustment insures uniform caliper, and the desired basis weight and finish throughout the run, at any selected setting. Breaks are fewer. Downtime is minimized. Wastage is cut way down.

Have a Moore & White sales engineer survey your installation and explain the greatly improved profit-potential of the Syco Drive in your operations. Your call involves no obligation.

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to run lengthwise of the sheet (omit ream markers); min. order, 10,000 lbs.

50% White Chart, Lithograph-Finish

No. 79—435,000 lbs., No. 72; flat, cut any size, min. width 22 ins., max. width 46 ins.; the grain to run lengthwise of the sheet unless otherwise specified (omit ream markers); min. order, 10,000 lbs.
* Barton, Duer & Koch Paper Co.
(50,000 lbs.) ..... .3415c

Chemical Wood Manifold White and Colored

No. 83—210,000 lbs., white, No. 13; flat, cut 21x32, 28x34, 32x42, and 34x44 ins.; min. order, 10,000 lbs.
No. 85—40,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 13. Flat, cut 28x34, 32x42, and 34x44 ins. Min. order, one color, 5,000 lbs.

50% Manifold, White and Colored

No. 86—15,000 lbs., white, No. 14; flat, cut 32x42 ins.; min. order, 10,000 lbs.
No. 87—80,000 lbs., white, No. 18; flat, cut 21x32, 28x34, 32x42, and 34x44 ins.; min. order, 10,000 lbs.
* Barton, Duer & Koch Paper Co.
(40,000 lbs.) ..... .50c
No. 89—13,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 18. Flat, cut 28x34, 32x34, and 34x44 ins. Min. order, one color, 5,000 lbs.

100% White Manifold

No. 90—5,000 lbs., No. 18; flat, cut 32x42 ins., min. order, 5,000 lbs.

50% White Glazed Manifold

No. 91—20,000 lbs., No. 16. Flat, cut 32x42 ins., min. order, 20,000 lbs.
* Barton, Duer & Koch Paper Co. . .31c

Chemical Wood Bond White

No. 102—200,000 lbs., white No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 40 000 lbs.
R. P. Andrews Paper Co. ..... .1510c
No. 104—80,000 lbs., No. 40; flat, cut 32½x42½ ins.; the grain to run lengthwise of the sheet; min. order, 20,000 lbs.

Chemical Wood White Mimeograph Bond

No. 105—40,000 lbs., white, No. 26. Flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 10 000 lbs.
* Barton, Duer & Koch Paper Co. . .37c

25% Bond, White and Colored

No. 106—50,000 lbs., white, No. 26; rolls, 22 ins. wide, 36 ins. in diameter (3-inch fiber cores); min. order, 20,000 lbs.
No. 107—700,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 40,000 lbs.
No. 109—700,000 lbs., No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 20 000 lbs.
* Howard Paper Mills
(300,000 lbs. only) ..... .2406c
No. 110—30,000 lbs., white, No. 32; rolls, 21 and 26 ins. wide, 36 ins. in diameter (3-inch fiber cores); min. order, 20,000 lbs.
No. 113—10,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 26; flat, cut 34x44 ins.; min. order, 5,000 lbs.
No. 114—200,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 32. Flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, one color, 10,000 lbs.
* Howard Paper Mills ..... .2504c
No. 115—20,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, one color, 10,000 lbs.

25% Opacified Bond Paper

No. 116—200,000 lbs., white, cut 32x42, 38x48, and 38x49½ ins.; min. order, 40,000 lbs.
No. 116—40,000 lbs., 29x41 ins., buff, No. 32, flat, min. order, 20,000 lbs.
* Barton, Duer & Koch Paper Co.
(40,000 lbs.) ..... .3215c

Chemical Wood White Ledger

No. 150—350,000 lbs., No. 48. Flat, cut any size, min. width 17 ins., max. width 48 ins.; min. order, 20,000 lbs.
* R. P. Andrews Paper Co. ..... .1610c
No. 151—80,000 lbs., No. 64; flat, cut any size, min. width 17 ins., max. width 48 ins.; min. order, 10,000 lbs.
No. 153—40,000 lbs., No. 88; flat, cut any size, min. width 17 ins., max. width 48 ins.; min. order, 10,00 lbs.

25% Ledger, White and Colored

No. 154—80,000 lbs., white, No. 48; flat, cut 28x34, 32x42, 34x44, and 38x48 ins.; min. order, 10,000 lbs.
* Howard Paper Mills ..... .2406c
No. 155—80,000 lbs., white, No. 64; flat, cut 28x34, 32x42, 34x44, and 38x48 ins.; min. order, 10,000 lbs.
* Howard Paper Mills ..... .2406c
No. 156—30,000 lbs., white, No. 88; flat, cut 28x34, 32x42, 34x44, and 38x48 ins.; min. order, 10,000 lbs.
No. 157—40,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 64. Flat, cut 34x44 ins.; min. order, one color, 10,000 lbs.
No. 158—10,000 lbs., blue, buff, cherry, green, pink, salmon, and yellow, No. 88; flat, cut 34x44 ins.; min. order, one color, 10,000 lbs.

Chemical Wood, White and Colored Index

No. 182—370,000 lbs., white, 25½x30½—220; flat, cut 32x42 and 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
* Whitaker Paper Co.
(75,000 lbs.) ..... .12c
No. 183—25,000 lbs., white, 25½x30½—280; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
* Whitaker Paper Co. ..... .12c
Frank Parsons Paper Co. ..... .1515c
No. 184—10,000 lbs., white, 25½x30½—340; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
Frank Parsons Paper Co. ..... .1515c
No. 185—150,000 lbs., buff, 25½x30½—220; flat, cut 32x42 ins., with projecting colored-paper marker between each 100 sheets; min. order, 20,000 lbs.
* Whitaker Paper Co. ..... .1275c

50% Index, White and Colored

No. 188—160,000 lbs., white, 25½x30½—220; flat, cut 32x42, 32x48 and 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
No. 189—20,000 lbs., white, 25½x30½—280; flat, cut 32x42 and 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
No. 191—120,000 lbs., blue, buff, cherry, fawn, green, pink, salmon, and yellow; 25½x30½—220; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, one color, 10,000 lbs.
No. 192—40,000 lbs., blue, buff, cherry, fawn, green, pink, salmon, and yellow; 25½x30½—280; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, one color, 10,000 lbs.

100% White Index

No. 196—65,000 lbs., 25½x30½—250; flat, cut 20¼x30 ins.; min. order, 20,000 lbs.
* Barton, Duer & Koch Paper Co.
(40,000 lbs. only) ..... .50c

Coated Cover, White and Colored

No. 200—10,000 lbs., white, 20x26—120; flat, cut 26½x41 and 34x44 ins.; the grain to run lengthwise of the sheet; min. order, 10,000 lbs.
* Walker Goulard Plehn Co. ..... .1785c

Antique-Finish Cover, White and Colored

No. 203—80,000 lbs., 20x26—100; blue, buff, dawn, quaker drab, terra cotta, gray, brown, green, gobelin blue, granite, tea, and canary; flat, cut 25¼x39 inches; min. order, one color, 10,000 lbs.

50% Laid Cover, Colored

No. 206—30,000 lbs., blue, cream, white, gray, and green; 20x26—130; flat, cut 25¼x39 and 28x41 inches; min. order, one color, 2,000 lbs.

Wood Manila

No. 208—180,000 lbs., 24x36—80; flat, cut 25x38, 32x42 and 40x52½ ins.; min. order, 20,000 lbs.
* Whitaker Paper Co.
(40,000 lbs.) ..... .0845c

Rope Manila

No. 215—5,000 lbs., 24x36—160; rolls, 48 ins. wide (3-inch fiber cores); min. order, 5,000 lbs.
* R. P. Andrews Paper Co. ..... .3523c
Paper Corp. of U. S. ..... .4276c
No. 216—5,000 lbs., 24x36—280; rolls, 48 ins. wide (3-inch fiber cores); min. order, 5,000 lbs.
Paper Corp. of U. S. ..... .4220c
* R. P. Andrews Paper Co. ..... .3523c

No. 2 Kraft

No. 218—20,000 lbs., 24x36—80; flat, cut any size; max. length 56 ins., in bundles wrapped and tied; min. order, 10,000 lbs.
No. 218—15,000 lbs., 24x36—100; flat, cut any size; max. length 56 ins., in bundles wrapped and tied; min. order, 10,000 lbs.
No. 218—60,000 lbs., 24x36—120; flat, cut any size; max. length 56 ins., in bundles wrapped and tied; min. order, 10,000 lbs.
No. 218—50,000 lbs., 24x36—140; flat, cut any size; max. length 56 ins., in bundles wrapped and tied; min. order, 10,000 lbs.
No. 218—40,000 lbs., 24x36—160; flat, cut any size; max. length 56 ins., in bundles wrapped and tied; min. order, 10,000 lbs.
* Cauthorne Paper Co. ..... .986c
No. 219—40,000 lbs., 24x36—100; cut any size, folded (25 sheets per fold), in wrapped bundles; min. order, 5,000 lbs.
No. 219—5,000 lbs., 24x36—80; cut any size, folded (25 sheets per fold), in wrapped bundles; min. order, 5,000 lbs.
No. 219—10,000 lbs., 24x36—120; cut any size, folded (25 sheets per fold), in wrapped bundles; min. order, 5,000 lbs.
No. 219—10,000 lbs., 24x36—160; cut any size, folded (25 sheets per fold), in wrapped bundles; min. order, 5,000 lbs.
No. 220—50,000 lbs., 24x36—100; 9 and 11 ins. wide, min. 22 ins., max. 24 ins. in diameter; rolls, wound on wooden plugs, 1⅞-inch hole, or on 3-inch fiber core as may be specified with the order; min. order, 5,000 lbs.
No. 220—60,000 lbs., 24x36—100; 12¼ ins. wide, min. 21 ins., max. 22 ins. in diameter; rolls, wound on wooden plugs, 1⅞-inch hole, or on 3-inch fiber core as may be specified with the order; min. order, 5,000 lbs.
No. 220—30,000 lbs., 24x36—100; 36 and 48 ins. wide, min. 28 ins., max. 30 ins. in diameter; rolls, wound on wooden plugs, 1⅞-inch hole, or on 3-inch fiber cores as may be specified with the order; min. order, 5,000 lbs.
No. 220—5,000 lbs., 24x36—160; 36 and 48 ins. wide, min. 28 ins., max. 30 ins. in diameter; rolls, wound on wooden plugs, 1⅞-inch hole, or on 3-inch fiber core as may be specified with the order; min. order, 5,000 lbs.

White Gummed

No. 252—250,000 sheets (ungummed), No. 36; flat, cut 19x27½ and 22x34 ins.; min. order, 25,000 sheets.
R. P. Andrews Paper Co.
(per M sheets) $31.30
Stanford Paper Sales Corp.
(per M sheets) $30.40
Hobson Miller Paper Co.
(per M sheets) $31.30
Bermingham & Prosser Paper Co.
(per M sheets) $31.72
Paper Corp. U. S.
(per M sheets) $30.70
* Bulkley Dunton & Co.
(per M sheets) $27.99
Whitaker Paper Co.
(per M sheets) $29.64

25% Blotting, White

No. 254—10,000 lbs., 19x24—160; flat, cut 19x24 ins. in wrapped bundles; min. order, 10,000 lbs.
Stanford Paper Sales Corp. ..... .2310c
* Hobson Miller Paper Co. ..... .2110c
Bermingham & Prosser Paper Co. .23c
Bulkley Dunton & Co. ..... .2624c

Desk Blotting, Colored

No. 255—20,000 lbs., moss green, 19x24—200; flat, cut 19x24 ins., in wrapped bundles and tied; min. order, 10,000 lbs.
R. P. Andrews Paper Co. ..... .17c
Stanford Paper Sales Corp. ..... .1785c
Hobson Miller Paper Co. ..... .1750c
Bermingham & Prosser Paper Co.
(25,000 sheets) ..... .1780c
Bulkley Dunton & Co. ..... .1749c
Whitaker Paper Co. ..... .17c

High-Finish Red Wallet Board

No. 265—10,000 lbs., 24x36—320; flat, cut 38x48 ins., in bundles wrapped and tied; min. order, 5,000 lbs.
R. P. Andrews Paper Co. ..... .1658c
* Paper Corp. of U. S. ..... .1458c

High-Finish Chemical Wood Manila Tag

No. 271—50,000 lbs., 24x36—280; flat, cut 28x34 and 38x48 ins.; min. order, 20,000 lbs.
* Paper Corp. of U. S. ..... .1379c
Whitaker Paper Co. ..... .1429c
Whitaker Paper Co. ..... .1470c

Jute Tag

No. 280—20,000 lbs., 22½x28½—280; flat, cut 34x44 ins.; min. order, 10,000 lbs.
* R. P. Andrews Paper Co. ..... .1914c
Paper Corp. of U. S. ..... .2455c
No. 281—20,000 lbs., 22½x28½—380; flat, cut 34x44 ins.; min. order, 10,000 lbs.
* R. P. Andrews Paper Co. ..... .1914c
Paper Corp. of U. S. ..... .2455c

Manila Board

No. 282—15,000 lbs., 22½x28½—400; flat, cut 22x34 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
* Paper Corp. of U. S. ..... .1124c

White Litho-Coated One-Side Cardboard

No. 360—10,000 sheets; flat, cut 34x57 ins.; the

ANOTHER PRACTICAL PAPER PROBLEM SOLVED BY HERCULES RESEARCH

Now—a New Simplified Hercules Automatic Emulsifier

HERCULES' TECHNICAL RESEARCH in the rosin size field has once again resulted in an improved, amazingly simple, automatic emulsifying unit that merits the attention of paper manufacturers everywhere. This new automatic emulsifier is lower in price than the first Hercules automatic emulsifying unit introduced to the paper trade in 1948.

The original Hercules automatic emulsifying unit was the first in its field, and offered a completely new technique in handling and emulsifying paste rosin size.

Twenty paper mills have already installed this revolutionary rosin size emulsifying process, and additional units are scheduled for early installation. Write for details.

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SIZING MATERIALS AND CHEMICALS FOR PAPER

grain to run lengthwise of the sheet; min. order, 10,000 sheets.
* Barton, Duer & Koch Paper Co.
(per M sheets) $160.90
Bulkley Dunton & Co.
(per M sheets) $166.83
No. 381—30,000 sheets; white, flat, 22x34 ins., 4-ply, each 100 sheets fully banded; min. order, 10,000 sheets.
* Old Dominion Paper Co.
(per M Sheets) $70.75
Barton Duer & Koch Paper Co.
(per M sheets) $72.35
Paper Corp. of U. S.
(per M sheets) $75.10
Bulkley Dunton & Co.
(per M sheets) $74.28

Railroad Board, White and Colored

No. 384—10,000 sheets, ash gray, green, orange, and red; flat, 22x34 ins., 4-ply, each 100 sheets fully banded; min. order, one color, 5,000 sheets.
* Old Dominion Paper Co.
(per M Sheets) $83.55
Barton Duer & Koch Paper Co.
(per M sheets) $85.35
Paper Corp. of U. S.
(per M sheets) $92.10
Bulkley Dunton & Co.
(Minimum order 10,000 sheets)
(per M sheets) $87.72
No. 385—5,000 sheets; buff, flat, 22x28 ins., 14-ply, each 50 sheets fully banded; min. order, 5,000 sheets.
* Old Dominion Paper Co.
(per M Sheets) $70.75
Barton Duer & Koch Paper Co.
(Minimum order 10,000 sheets)
(per M sheets) $72.75
Bulkley Dunton & Co.
(per M sheets) $74.38

Wood Cardboard, Colored

No. 386—100,000 lbs., buff, 22½x28½—150; rolls, 20 and 23 ins. wide, 36 ins. in diameter (3-inch fiber cores); min. order, 40,000 lbs.
* Barton, Duer & Koch Paper Co.. .1250c
No. 388—10,000 lbs., melon, 22½x28½—184; flat, cut 20x30 ins.; min. order, 10,000 lbs.
* Barton, Duer & Koch Paper Co. . .12c

Chemical Wood Tan Board

No. 310—200,000 lbs., 22½x28½—300; flat, cut 25x38, 28x38, and 34x44 inches; min. order, 10,000 lbs.
R. F. Andrews Paper Co. ..... .1981c
* Paper Corp. of U. S. ..... .1861c

United States Postal Card Paper

No. 325—7,500,000 lbs., 22½x28½—188; rolls, 33 ins. wide, 36 ins. in diameter (6-inch iron or metal capped returnable fiber cores); min. order, 40,000 lbs.
* R. P. Andrews Paper Co.
(2,400,000 lbs.) ..... .906c
* Whitaker Paper Co.
(2,500,000 lbs.) ..... .0990c
* Frank Parsons Paper Co.
(1,000,000 lbs.) ..... .08875c
No. 327—80,000 lbs., 22½x28½—188; rolls, 22 ins. wide, 36 ins. in diameter (6-inch iron or metal capped returnable fiber cores); min. order, 40,000 lbs.
* Whitaker Paper Co. ..... .990c

Pressboard, Colored

No. 352—100,000 sheets; gray, flat, cut 30x36 ins., thickness .0300 inch; min. order, 5,000 sheets.
* Barton, Duer & Koch Paper Co.
(50,000 sheets only) ..... .3681c
R. P. Andrews Paper Co.
(100,000 sheets) ..... .4595c
* R. P. Andrews Paper Co.
(50,000 sheets) ..... .4395c

Newsboard

No. 360—150,000 lbs., 26x38; No. 100; flat, cut any size, min. width 21 ins., max. width 40 ins. (To be guillotine-trimmed square on four sides.) Min. order, 10,000 lbs.
* R. P. Andrews Paper Co. ..... .625c

Binder's Board, No. 1 Quality

No. 366—40,000 lbs., No. 1, 25¾x30¾ ins., Nos. 16, 18, 20, 25, 30, and 40; flat, to trim 25x30 ins.; min. order, 5,000 lbs.
* Mudge Paper Co. ..... .0798c
No. 367—15,000 lbs., No. 1, 25¾x30¾ ins., Nos 17 and 30; flat, to trim 34x44 ins.; min. order, 5,000 lbs.
Mudge Paper Co. ..... .0798c

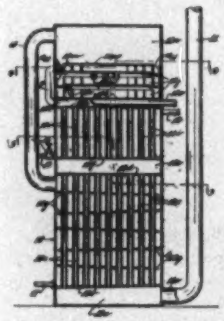
Chestnut Cover Board

No. 369—40,000 lbs., 25¼x30¼ ins., Nos. 17, 19, 21, 25, 31, and 41; flat, to trim 25x30 ins.; min. order, 5,000 lbs.
No. 370—100,000 lbs.; 25¼x30¼ ins., Nos. 16, 19, 24 and 31; flat, to trim 25¼x37½ ins.; min. order, 20,000 lbs.

Patent Abstracts

● ***In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.***

U. S. 2,538,275 — Vertical Tube Evaporator. Ralph J. Serpas, Minneapolis, Minn. Filed August 22, 1946—Issued January 16, 1951.



A liquid evaporating and concentrating apparatus having in combination, a casing having a chamber at the bottom thereof for receiving liquid to be evaporated, a partition forming the top of said chamber, a second partition spaced vertically from said partition, a multiplicity of spaced tubes extending between said partitions and communicating with said chamber, a third partition a short distance above said second partition forming a second chamber, a fourth partition spaced vertically from said third partition, a multiplicity of second tubes extending between said third and fourth partitions and open at their upper and lower ends, means for delivering a heating medium between said third and fourth partitions and around said second tubes, a third chamber above said fourth partition, a plurality of spaced shallow trays in said casing above said third chamber, a fourth chamber above the uppermost of said trays, means for delivering hot liquid and vapors from said third chamber to the uppermost tray and said fourth chamber, said trays having means therein for causing the liquid therein to pass in a long tortuous path and discharge from the top tray to the lower trays successively, a conduit connecting said fourth chamber to the said casing between said first and second partitions and around said first mentioned tubes, and means for withdrawing the liquid from said lowermost tray.

U.S. 2,538,279—Manufacture of Articles Comprising Cellulose. Wayne A. Sisson, Silverside, and Mamerto M. Cruz, Jr., Wilmington, Del., assignors to American Viscose Corporation, Wilmington, Del. Filed November 30, 1944—Issued January 16, 1951.

The method of handling acid-moist articles freshly prepared from viscose, which articles comprise at least some partially regenerated cellulose and have a pH of less than 1 after withdrawal thereof from an acid setting bath, to effect complete regeneration of the cellulose by the acid while inhibiting acid degradation of the cellulose during and after such regeneration, and while the articles are held under acidic conditions comprising storing the article, at room temperature and under atmospheric pressure, in a weakly acidic aqueous sodium salt solution of from 10 to 30% concentration to raise the pH on the article to a value of greater than 1 and less than 7, and keeping the article in that solution at room temperature and under atmospheric pressure at least until the cellulose is completely regenerated.

U.S. 2,538,302 — Lignin-Furfuryl Alcohol Resins and Process of Making Same. Raymond Norris Evans and Angelo Paul Ingrassia, Laurel, Miss., assignors to Masonite Corporation, Laurel, Miss. Filed June 3, 1946—Issued January 16, 1951.

Process of preparing a water and alkali resistant fibrous products, which comprises heating a solution in which the reactive components consist of furfuryl alcohol, lignin and an acid catalyst to form a resinous material, heating the resinous material to substantially reduce the volatile content, mixing the resinous material with acid-hydrolyzed ligno-cellulose fiber, and subjecting the mixture to heat and pressure, said lignin being present in quantities up to 60% based on the weight of the furfuryl alcohol.

U.S. 2,538,397 — Manufacture of Coated Water-Vaporproof Paper and Coating Compositions. Alexander Szware, Montreal, Quebec, Canada. Filed March 6, 1948—Issued January 16, 1951.

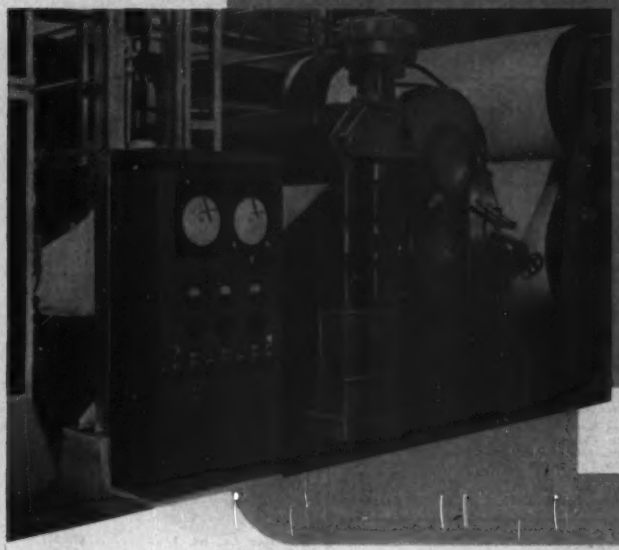
A coating composed of the character described consisting of from 55% to 65% of polymerized coumarone indene resin, from 8% to 12% of ethyl cellulose, from 10% to 20% of a rosin plasticizer selected from the group consisting of methyl ester of rosin and hydrogenated methyl ester of rosin, from 3% to 6% of a polymer of isobutene plasticiser obtained by low temperature polymerization of isobutene, using fluoride as a catalyst, from 8% to 14% of paraffin wax melting at a temperature between 122° F. and 150° F. and from 1% to 3% zinc stearate.

U.S. 2,538,742—Digesting Lignocellulose With a Rosin Soap. Grant S. Willey, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill. Filed February 14, 1944—Issued January 16, 1951.

The method of producing a sized heat and pressure consolidated ligno-cellulosic product having a substantial quantity of water soluble material removed therefrom and substantially free from efflorescent salts, consisting of digesting at a temperature of 335° F. to 385° F. for ½ to 1½ hours, a comminuted natural ligno-cellulosic material with about one to five parts by weight of water containing as the essential component .01 to .12 parts by weight, based upon the bone-dry ligno-cellulosic fiber, of an aqueous dispersed pyroligneous acid precipitate soap selected from one group consisting respectively of ammonium, sodium and potassium soaps of rosin acid until an acid pH is attained and until at least a portion of the hemi-cellulosic material has been removed from said natural ligno-cellulosic material and washing said cooked comminuted ligno-cellulosic material substantially free from cooking liquors, further disintegrating said fibers into a pulp, forming said pulp into a shape substantially similar to said desired product and consolidating said shape under heat and pressure into said product.

BROWN INSTRUMENTATION IS THE MODERN APPROACH TO PAPER INDUSTRY PROCESSES

STEP UP MILL EFFICIENCY WITH HONEYWELL ENGINEERED INSTRUMENT CUBICLES



One of two control cubicles on pulp drier at large Southern Mill.

What this means in your mill

- *An over-all system individually engineered to give specific results.*
- *Greater operating efficiency, improved quality of product, and increased mill production through skillfully engineered and properly located cubicles.*
- *A reduction of installation time and expense at the mill, as instrument mounting, wiring and piping are all done at the Brown factory.*
- *Greater protection of instruments against damage.*

THE trend in papermaking today is toward instrument and control cubicles factory wired and piped. They reduce installation time—protect the instruments and—what is even more important—place the controls where they are needed, convenient both to the operator and to the process equipment.

Honeywell engineered cubicles are already in use on digesters, bleach plants, brown stock washing systems, recovery systems, and many other mill processes.

Every cubicle, whether it be of the conventional recorder, the console, or the graphic panel type, is custom engineered to your process by Honeywell engineers skilled in the application of instruments to paper mill process. It is designed with one purpose in view—to help your operator get the maximum efficiency out of the process or processes for which he is responsible. The result? Increased production—improved quality—lower operating costs—all of which add up to greater mill profits.

For instrumentation engineered to *your* specific requirements, call in your local Honeywell engineer . . . he is as near as your phone. For additional information, write for a copy of Data Sheet 2.9-22a (Brown Stock Washing), or 2.9-14a (Chemical Recovery).

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division*, 4510 Wayne Ave., Philadelphia 44, Pa. Offices in more than 80 principal cities of the United States, Canada and throughout the world.

MINNEAPOLIS Honeywell

BROWN INSTRUMENTS

PRICES

The prices below reflect market quotations in New York at the mill level on standard grades. Most orders accepted, however, at price prevailing on date of shipment. Does not include spot offerings.

PAPER AND BOARD

Standard News, Delivered Ports

Rolls, contract, per ton	$105.00/110.00
Sheets	118.00/ —

F.o.b. Mills. C.l. Frt. allowed, dock, N. Y.

Kraft— pr cwt., 40# base wgt.

Standard Wrapping Rolls	$7.75/ —
No. 1 Wrapping Rolls	8.25/ 8.50
Standard Bag	7.50/ —

Tissues— per ream 24x36 (480) 10 lbs. 2500 lbs or more

Wh. No. 1 Frd.	$1.95 /$2.25
Wh. No. 1 MG	1.95 / 2.25
Wh. No. 1½	1.85 / 2.15
Wh. No. 2	1.85 / 2.15
Kraft Non-Tar	1.85 / 2.15
White Non-Tar	1.95 / —

Toilet— per case of 100 rolls—1 M sheets

Unbleached 4½x4½	$8.00/$8.25
Unbleached 4½x5	6.60/ —
Bleached 4½x4½	7.10/ 8.80
Bleached 4½x5	9.85/ —
Per Case of 50 rolls—2000 sheets	
Unbleached 4½x4½	$8.00/$8.25
Bleached 4½x4½	6.95/ —
Per Case of 100 rolls—1000 sheets	
Facial, 4½x5, 2-ply	$8.95/10.65

Paper Towels— per case of 3750

Wh. Jr. M'tif'd 9½x9½	‡ $5.75
Br. Sr. M'tif'd 9½x12	‡ 4.10
Br. Jr. M'tif'd 9½x9½	‡ 3.60
Br. Jr. Sgl. fold 9½x10½	‡ 3.65
Bldd. 7½x11, 24/25 rolls	$6.00/7.55

Manila, per cwt.

No. 1 Jute Tag, 100-lb., sheets*	$19.55/21.55
Reg. Jute M.F. 40-lb., sheets*	18.00/20.00
Wrapping Manila	8.75/10.50
Printing Manila	10.50/12.00

* Less usual allowance for rolls.

WORLD WOOD PULP MARKETS

First Quarter Contract Prices, Per Short Air-Dry Ton

Varying freight allowances — Atlantic Ports

	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$85.00/100.00	$85.00/100.00			
Sulphate, Bleached	135.00/200.00	175.00/ —	†180.00/187.00‡		Competitive
Sulphate, Unbl. Northn.		147.50/155.00	†153.00/185.00*		
Sulphate, Unbl. Southn.					
Sulphite, Bichd. (Sftwd.)	135.00/165.00	145.00/ —	†175.00/ —	Competitive	Competitive
Sulfite, Bichd. (Hdwd.)	150.00/175.00				
Sulphite, Unbichd.	132.50/150.00	132.50/150.00	†153.00/165.00		
Sulphite, Unbl'd (Glassine)		143.00/146.50	†157.00/ —		
Soda, Bichd.	140.00/142.50	140.00/142.50			
Siderurgs, Pulping News	106.00/ —	106.00/ —			

* On dock. † Delivered.

Second Quarter Indications, Per Short Air-Dry Ton

Groundwood		$95.00/ —			
Sulphate, Bleached	$135.00/ —	190.00/ —	$290.00/315.00		
Sulphate, Unbl. Northn.		170.00/ —	265.00/297.50		
Sulphate, Unbl. Southn.					
Sulphite, Bichd. (Sftwd.)	135.00/ —	160.00/175.00			
Sulphite, Unbichd.		162.50/ —	265.00/ —		
Sulphite, Unbl'd (Glassine)					
Soda, Bichd.					

Gummed Tape— per bdl., 500 bdls. or more

90-lb. 375 ft. GSI	$7.20 / —
60lb. 600 ft. GSI	7.20 / —
35-lb. 800 ft. GSI	8.28 / —
35-lb. 500 ft. GSO	6.21 / —

Boards, per ton—

Filled News	$107.50/ —
Plain Chip	105.00/107.50
Bichd. Mix. L-d. Chip	147.50/ —
White Pat. coated .020	170.00/ —
Kraft Liners 42 lb.	115.00/117.50
Kraft Corr. .009	122.50/126.00
Binders Boards	137.50/140.00

The following prices are representative distributors' resale prices.

Rag Content Bonds and Ledgers— White, 20 lb.

Bonds	4 Cnts. per cwt.
100% Rag Ex. No. 1	$70.45/$72.10
100% Rag	62.45/ —
75% Rag	48.15/ —
50% Rag	38.90/ —
25% Rag	31.65/ 33.00

Ledgers	4 Cnts. per cwt.
100% Rag Ex. No. 1	$72.65/ —
100% Rag	63.90/ —
75% Rag	49.40/ —
50% Rag	40.20/ —
25% Rag	33.00/ —

Sulphite Bonds and Ledgers White, 20 lb.

Bonds	4 Cnts. per cwt.
Watermarked	$19.00/$20.50
Plain	18.05/ 19.50

Ledgers	4 Cnts. per cwt.
Watermarked	$20.30/$21.80
Plain	19.35/ 20.80

White Book

Conversion Coated	Case per cwt.
No. 1	$23.40/$24.65
No. 2	21.90/ 23.40
No. 3	20.40/ 22.40
Machine Coated	
No. 1	$18.15/$18.40
No. 2	16.15/ 16.65
Uncoated	
No. 1 Antique (Watermarked)	$18.65/$19.15
Offset	17.40/ 19.90
A Grade E. F.	17.40/ 18.15
A Grade S. C.	18.15/ 18.65
B Grade E. F.	17.65/ —
B Grade S. C.	16.90/ 18.40

‡ Indicates a price change.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) PENDING OPS ROLLBACK, THESE PRICES REPRESENT CEILING RANGE.

	New York Jan. 25	Philadelphia Jan. 25	Boston Jan. 25	Chicago Jan. 25
No. 1 Mixed Paper	$32.00/ 35.00	$32.00/ 35.00	$29.00/ 32.00	$33.00/ —
Bookbound Cuts	30.00/ 33.00	30.00/ 33.00	26.00/ —	38.00/ —
Mill Wrappers	30.00/ 35.00	30.00/ 35.00	30.00/ 36.00	35.00/ —
No. 1 News	37.00/ 41.00	33.00/ 40.00	33.00/ 36.00	38.00/ —
Over-issue News	40.00/ 45.00	40.00/ —	33.00/ 45.00	41.00/ —
Corrugated Containers	64.00/ 70.00	55.00/ 62.00	49.00/ 70.00	52.00/ —
New Corrugated Cuts	74.00/ 80.00	55.00/ 60.00	55.00/ 65.00	62.00/ —
Double Kraft Ld. Corr. Cuts	115.00/120.00	105.00/110.00	120.00/140.00	120.00/ —
100% Kraft Corr. Cuts	140.00/165.00	125.00/135.00	130.00/170.00	135.00/ —
Used Kraft Bags	85.00/ 95.00	80.00/ 85.00	85.00/116.50	65.00/ —
No. 1 Brown Kraft Paper	90.00/ 95.00	90.00/ 95.00	90.00/110.00	65.00/ —
Super Resorted Br. Kraft	100.00/105.00	100.00/105.00	100.00/125.00	90.00/ —
New Br. Kraft Env. Cuts	160.00/190.00	160.00/175.00	160.00/180.00	150.00/ —
New Br. Kraft Cuts	150.00/170.00	130.00/135.00	150.00/180.00	140.00/ —
No. 1 Gldwd Shvs.	80.00/ 85.00	75.00/ 80.00	80.00/ 85.00	75.00/ —
White Newsblanks	115.00/125.00	110.00/115.00	110.00/120.00	115.00/ —
No. 1 Flyleaf Shvs.	80.00/ 85.00	90.00/ 95.00	95.00/110.00	110.00/ —
No. 1 Soft Wht. Shvs.	180.00/190.00	170.00/175.00	175.00/195.00	175.00/ —
Super Soft Wht. Shvs.	190.00/200.00	190.00/200.00	190.00/210.00	185.00/ —
Hd. Wht. Shvs.	185.00/210.00	200.00/215.00	190.00/215.00	180.00/ —
Hd. Wht. Env. Cuts	200.00/245.00	225.00/ —	200.00/235.00	190.00/ —
New Manila Env. Cuts	140.00/150.00	160.00/165.00	140.00/165.00	115.00/ —
Col. Tab Cards	110.00/120.00	115.00/120.00	95.00/150.00	100.00/ —
Manila Tab Cards	170.00/185.00	165.00/175.00	160.00/200.00	165.00/ —
No. 1 Mixed Ledger	100.00/105.00	100.00/105.00	90.00/110.00	100.00/ —
White Ledger	130.00/140.00	125.00/130.00	125.00/140.00	125.00/ —
No. 1 Book & Mag.†	55.00/ 60.00	40.00/ 45.00	40.00/ 60.00	35.00/ —
No. 1 Rep'd. Hvy. Books‡	65.00/ 70.00	50.00/ 60.00	60.00/ 75.00	55.00/ —

* Delivered. † Includes Time & Life; no course groundwood. ‡ Not to exceed 10% groundwood.

RAG MARKET

New Domestic Cotton Cuttings
(Prices to Dealers, F.o.b. Ship. Pt.)

ALL PRICES NOMINAL

No. 1 White Shirts	$23.00/$24.00
No. 1 Unbichd. Muslins	23.00/ 24.00
Bichd. Canton Flannels	17.00/ 18.00
No. 1 Lt. Silesias	12.00/ 13.00
No. 1 Lt. Prints	9.00/ 12.00

● *"you name it... I helped make it!"*

Glue for paper weapons

What am I aiming? Glue! In a multi-ply artillery shell case. Weather-resistant glue. That holds tight in steaming jungles. On winter-swept plains. And helps deliver ammunition in perfect firing condition. Spiral-tube-winding adhesives must spread uniformly; take a quick, firm bite into the fibre; be non-stringy.

. . . and this isn't all!

● *"you name it . . . I helped make it!"* Look around defense plants. Glue helps equally well in the protective packaging, labeling, shipping of small arms ammunition, new and replacement parts for guns, tanks, planes. The NATIONAL touch is everywhere. Glue applied through imaginative research and service. To every item of defense.

STARCHES National ADHESIVES

NATIONAL STARCH PRODUCTS INC.

Executive Offices: 270 Madison Ave., New York 16, N. Y. • **Plants:** Dunellen, N. J., Chicago, Indianapolis, San Francisco. • **Sales Offices:** All principal cities. • **Canada:** Toronto and Montreal. • **England:** Slough. • **Holland:** Veendam.

Starch for Paper... from Pulp to Packaging!

free folder offers useful information on starches and adhesives for the paper industry

Here's the folder that was so much in demand at the TAPPI-APPA show! A complete listing of National Starches and Adhesives for paper making . . . coating . . . converting. Every requirement you can think of, *plus* the latest developments to come out of our research laboratories!

Of certain interest to paper technicians are:

HYDROSEAL, a new beater additive that closely approximates the gelatinous substance formed by pulp hydration . . .

FLOKOTE, an unusually stable oxidized starch for coating operations . . .

DURA-BOND, for combining corrugated board. Permits starch savings up to 10% . . .

—and a number of quality dextrines and starches that are uniform in working properties, texture and color . . . a complete line of "fluidities" . . . acid and chlorinated conversions. Specialties for beater, tub and calender sizings, brush or machine coating and greaseproofing. Also, converting adhesives for laminating, combining, mounting, bending and wrapping. Special formulations including taping adhesives for corrugated boxes . . . heat seal adhesives . . . tube winding glues in cold-water swelling, cook-up and prepared form.

Title: "The Amazing Versatility of Starches for the Paper Industry." Copies available upon request. Clip the attached coupon or write NATIONAL STARCH PRODUCTS INC., 270 Madison Avenue, New York 16, N. Y.

Please send a copy of the new National Starch folder for the paper industry.

Name_____

Title_____

Company_____

Address_____

City_____ Zone____ State_____

Wht. Bk. Blue Overalls (Bichahle)	13.50/ 14.00
No. 1 Blue Overalls	7.00/ 8.00
Fancy Shirts	6.00/ 6.50
No. 1 Washables	5.50/ 6.00
Suntan Khaki Cuts	11.00/ 12.00
Mixed Khaki Cuts	9.00/ 11.00
Corduroy Cuts	4.75/ 5.25
Cottonades	7.00/ 7.50
Bkhd. Underwear Cuts	nominal
Unbkhd. Underwear Cuts	nominal

Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

ALL PRICES NOMINAL

	Per 100 lbs.
Mixed White	$5.00/$5.50
Cotton Pants & Overalls	4.75/ 5.00
Thirds and Blues, Repacked	3.75/ 4.00
No. 1 Roofing Rags	3.00/ 3.10
No. 2 Roofing Rags	2.40/ 2.50
No. 3 & 4 Roofing Rags	2.20/ 2.30
Roofing Bagging	2.20/ 2.30

New Foreign Cotton Cuttings

(Prices to Mills, F.o.b. Dock, N.Y.)

	Per 100 lbs.
New Dark Cuttings	$4.75/$5.00
New Mixed Cuttings	4.75/ 5.25
Light Silesias	8.00/ 8.50
Light Flannelettes	7.50/ 8.00
New White Cuttings	nominal
New Unbleached Cuttings	nominal
Fancy Shirt Cuttings	6.50/ 7.50
Light Prints	6.50/ 7.50
Bleachable Khaki, No. 1	6.00/ 6.50
Unbl. Khaki, No. 1	5.00/ 5.50

Old Foreign Rags

(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	nominal
No. 2 White Cottons	nominal
No. 3 White Cottons	nominal
No. 4 White Cottons	nominal
Extra Light Prints	5.50/ 6.00
Old Light Prints	4.50/ 5.00
Med. Light Prints	3.75/ 4.00
Dutch Blue Cottons	4.00/ 4.50
Linsey Garments	2.75/ 3.00
Dark Cottons, Egyptian	2.50/ 2.75
Dark Cottons, European	2.75/ 3.00
Old Shapperies	2.40/ 2.50
New Shapperies	2.50/ 2.75

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$8.00/$8.25
Domestic Gunny, No. 1	7.75/ 8.00
Heavy Wool Tares	7.00/ 7.50
Foreign Manila Rope	7.25/ 7.75
Domestic Manila Rope	7.00/ 7.25
Jute Strings	6.25/ 6.50
No. 1 Sisal Strings	7.25/ 7.50
Mixed Strings	nominal
Paper Mill Tares	5.25/ 5.75
No. 1 Scrap Burlap	
Foreign	6.50/ 6.75
Domestic	7.00/ 7.50
Austr. Wool Pouches	7.50/ 8.50
New Burlap Cuttings	7.50/ 8.00

MATERIALS

Aluminum, sulfate:		
comi. bags, wks. cwt.	1.65	
iron-free c.l.	3.25	
Alcohol, ethyl:		
tax free, dnm. c.l. gal.	.77	/ 1.02
dcld. East Miss.		
Alcohol, methyl:		
Synthetic, Zone 1, dnm.		
c.l. flt. alld. gal.	.44	
Casein, acid-prec.:		
dom. sh. pt. c.l. lb.	.42	/ .45
dom. sh. pt. c.l. lb.	.39	/ .45
Caustic soda:		
c.l. wks. solid, 76%, cwt.	3.35	
flak. & grd. 100-lb. drums	3.75	
liquid 50% tanks	2.55	
liquid 70% tanks	2.65	
China clay:		
dom. air-float. filler, c.l. wks. ton	10.00	
water-washed, lump, filler	11.00	
coating	17.60	/30.56
imported, ex whse. short ton	15.20	/28.35
Chlorine:		
single-unit tanks, works. cwt.	2.70	
multi-unit cwt.	3.20	/ 4.40
Formaldehyde:		
USP, ink. dnm, c.l. wks. lb.	.0600/	.0625
l.c.l. E. wks.	.0650/	.0675
Fuel oil:		
Bunker C, No. 6 Cal. hvy tanks, refinery lb.	1.95	/ 2.15
light bbl.	2.05	/ 3.10
Hydrogen peroxide:		
USP, 35% obyo. E. of Miss. lb.	.24½/	.25½
Lime:		
hydrated, bags, wks. Buffalo ton	13.50	
Rosin:		
B gum, drms, c.l. Savan. cwt.	8.00	
G, H, I, K. cwt.	8.70	/ 8.79
FF, wood, do. cwt.	7.30	
Rosin size:		
70%, gum & pale grds, tank cars, south, sh. pt. cwt.	6.80	/ 7.00
Salt cake:		
dom. bulk, c.l. wks. ton	17.00	
wks. frt. all. ton	20.00	/22.00
Soda ash:		
light, 58%, bags, wks.	1.50	
bulk cwt.	1.30	
Sodium silicate 40°:		
turbid. c.l. wks. cwt.	1.20	
l.c.l. wks.	1.35	/ 1.95
Sodium peroxide:		
dms. c.l. E. of Miss. lb.	.19	
l.c.l. do. lb.	.19½/	.20
Soybean, protein:		
chem. ind. wks. c.l. lb.	.24	/ –
Clay and Chlc.		
Sulfuric acid:		
60° Be. obyo. c.l. wks. cwt.	1.75	/ –
l.c.l. wks. cwt.	2.05	/ 2.60
Sulfur:		
crude, c.l. mines, contract, long ton	21.00	/22.00
f.o.b vessels Gulf	22.50	/23.50
Export, f.o.b. Gulf	25.00	
Sulfur dioxide:		
liquid, comi. cyl. wks. lb.	.09	
multi-unit cars lb.	.04½	
Starches:		
pearl corn, bags, c.l. wks. cwt.	6.00	/ —
white dextrines, c.l. wks. cwt.	7.40	/ —
potato, Idaho, c.l. wks. cwt.	5.50	/ —
potato, Maine, c.l. wks. cwt.	5.25	/ —
tapioca, conv. dextrines cwt.	8.25	/ 8.75
medium grds. Gulf and East Coast ports	6.75	/ 7.50
low, Siam, on dock N. Y.	5.75	/ 6.00
	nominal	
Talc:		
domestic, 50-lb. sacks, c.l. wks. ton	25.00	/30.00
Titanium dioxide:		
anastase, c.l. dcld., bags lb.	.21	/ .21½
l.c.l. dcld. lb.	.22	/ .23½
rutile, c.l. dcld. lb.	.23	/ .23½
l.c.l. dcld. lb.	.24	/ .24½

N.B.: For special market conditions see *Trends*.

IMPORTS

IMPORTS AT NEW YORK

Week Ending March 17

Newsprint

Gilman Paper Co., Mathilda Thorden, Hallstavik, 111 rolls.

Washington Daily News, (Alexandria, Va.), Mathilda Thorden, Hallstavik, 914 rolls.

(———), Markland, Liverpool, N.S., 3870 rolls; 3286 rolls (Alexandria, Va.).

(———), Vinland, Cornerbrook, 3876 rolls.

Madden Reeve Angel & Co., Inc., Finntrader, Hango, 308 rolls; 392 rolls (Alexandria, Va.).

Rice Paper

Kane Import Co., Anna Maersk, Keelung, 15 cs.

Crepe Paper

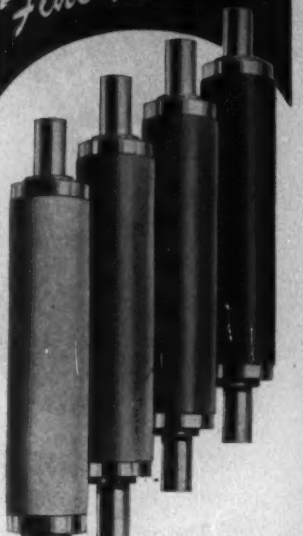
Brundage Merchandise Co., American Counselor, Rotterdam, 27 cs.

Wallboard

H. M. Bickford Lumber Co., American Counselor, Amsterdam, 270 crates.

APPLETON SUPER-CALENDER ROLLS . . .

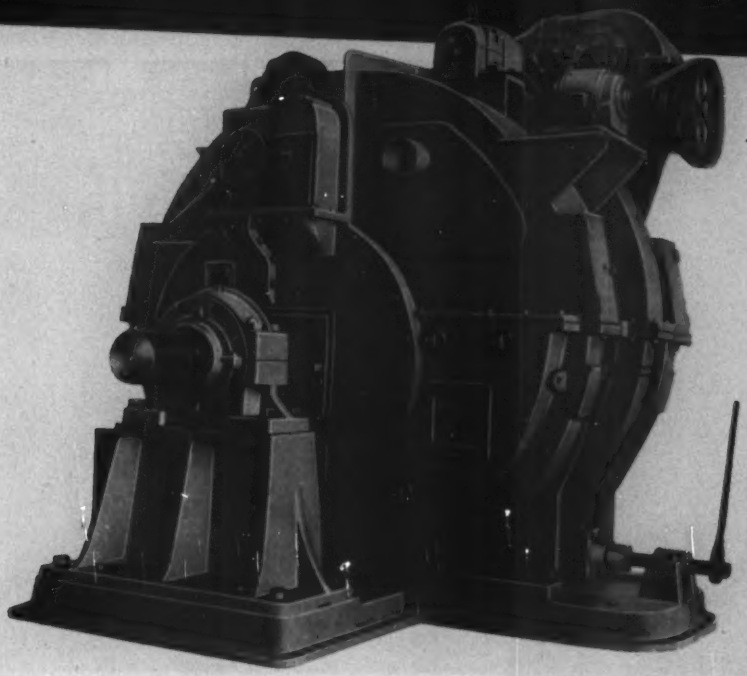
First Choice for Fine Finishes!



Appleton builds America's finest finishing rolls — available in a complete range of sizes and fillings to meet every finishing requirement.

THE APPLETON MACHINE CO.
APPLETON, WISCONSIN
Eastern Sales Representatives
CASTLE & OVERTON, INC.
630 Fifth Avenue, New York
Western Sales Representatives
PACIFIC COAST SUPPLY CO.
San Francisco • Portland

Reduce Your Labor Costs 70%



Another famous *Appleton Machine Company* product, this outstanding modern grinder designed for all grades of groundwood pulp, can cut your operating labor costs up to 70 per cent!

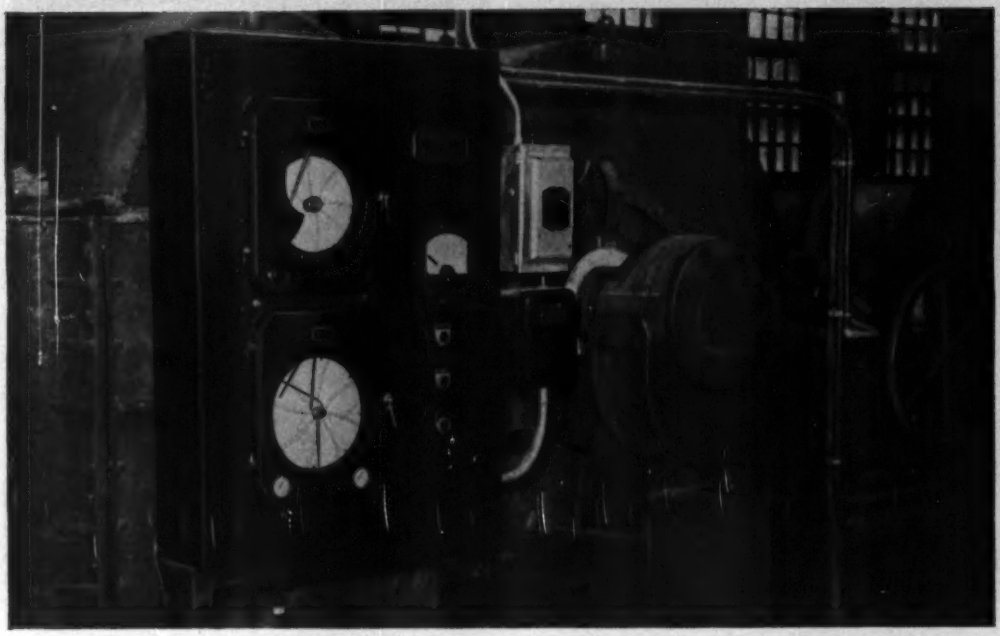
The Roberts Pulpwood Grinder is a continuous, high-speed ring-type machine that replaces 3 or 4-pocket units with resulting economy. High caliber operating means lower cost pulp with less waste. Don't let inefficient, out-of-date equipment eat up your profit margin!

The Roberts Pulpwood Grinder's many operating advantages are outlined in detail in a free bulletin that you can have today. Write now for complete details on this machine and the *Appleton Machine Company's* complete line of paper-making equipment.

CUSTOM-BUILDERS OF PULP & PAPER MILL MACHINES • WINDERS •
ROBERTS GRINDERS • FINISHING ROLLS • REWINDERS

HIGHEST STOCK BEATER CAPACITY

at LOWEST COST with Taylor Control



Taylor's Centennial — Accuracy First — Since 1851

IF THERE ever was a time for increased paper production at lower cost—it's right now. With Taylor Automatic Beater Roll Pressure Control like this (above), your beaters can be operated at highest capacity with lowest power consumption per ton. You'll turn out higher quality finished paper. And you'll save yourself a big replacement cost for roll and plate fillings.

Taylor Beater Control Systems and Taylor Pressure Recorders directly measure (see box, right) the pressure on the stock as it passes between roll and bed plate. Result—you can process each furnish to a predetermined point of freeness in the shortest possible time. Small wonder more than 500 Taylor Beater Roll Pressure Instruments are now helping produce uniform stock for over fifty types and grades of paper.

You can depend on the simple Taylor principle of beater roll pressure measurement, whether you use control or a simple recorder. Ask your Taylor Field Engineer! Or write Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. *Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.*

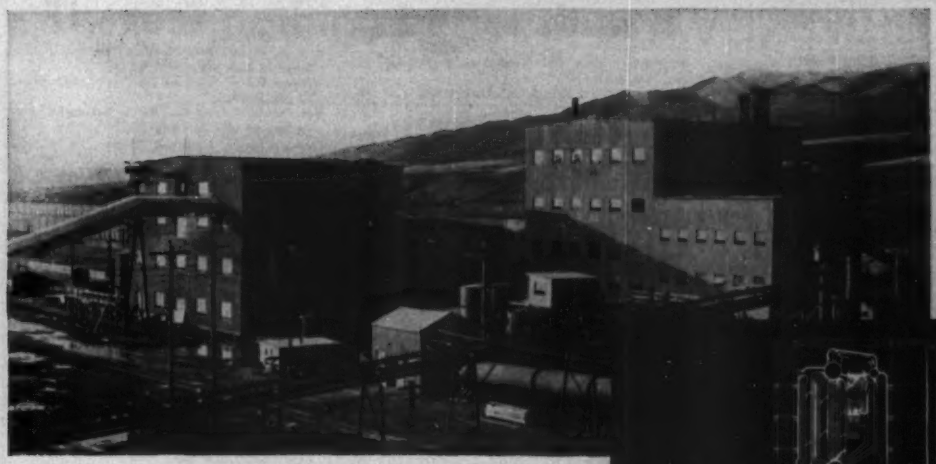
Pressure Sensitive Elements offer a direct means of measuring operating pressure. They are rugged, accurate and able to withstand operating abuse in average paper mill.

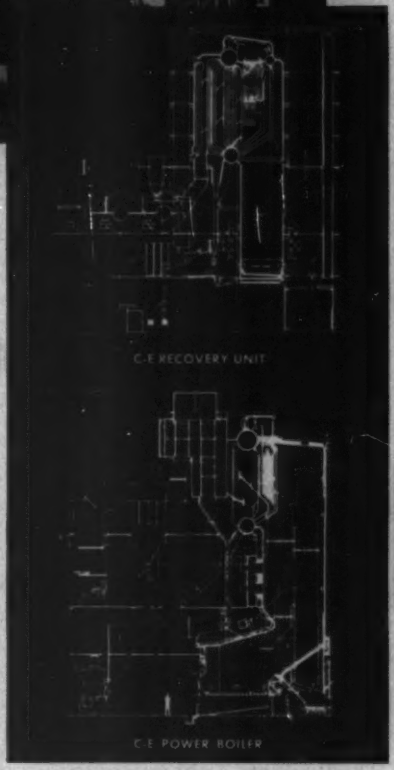
Beater Roll Pressure Recorder. Pen of this instrument accurately and directly records, in pounds pressure, the pressure being exerted on stock passing between roll and bed plate.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

All Steam for Potlatch Mill

Supplied by C-E UNITS





During the last week in December 1950 Potlatch Forests, Inc., with a long history as a logging and lumbering enterprise founded by the Weyerhaueser interests, started up its new Pulp and Paper Division mill on the Clearwater River above Lewiston, Idaho.

All steam for this modern mill, which will turn out a large variety of container board, tag stock and kraft papers, is supplied by power and recovery boilers furnished by Combustion Engineering—Superheater, Inc.

The C-E Recovery Unit is designed to burn 464,000 pounds of dry black liquor solids per 24 hours and will produce steam at 610 psi and 730 F.

The power boiler features a furnace of unique design arranged to burn hogged wood, pulverized fuel and oil—alone or in combination as desired. The hogged fuel is burned in the lower furnace on a C-E Spreader Stoker. C-E Raymond Bowl Mills will supply pulverized coal to horizontal burners in the upper furnace wall. Design capacity is 200,000 lb of steam per hr at pressure and temperature similar to the recovery unit.

C-E Steam Generating and Recovery Units are in service in many of the leading pulp and paper mills throughout the United States, Canada and abroad. B-474

Combustion Engineering—Superheater, Inc.

200 Madison Avenue • New York 16, N. Y.

PRODUCTS FOR THE PAPER INDUSTRY INCLUDE RECOVERY UNITS, STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; ALSO PRESSURE VESSELS

Wallpaper

J. H. Frankenberg, Flying Trader, Kobe, 1 ble. (grasscloth).

Triton Co., Flying Trader, Yokohama, 10 cs.

Intermaritime Forwarding Co., Media, Liverpool, 226 cs.

Stencil Paper

Stevens Nelson Paper Corp., Flying Trader, Kobe, 6 cs.

Paper Napkins

(———), Batory, Copenhagen, 38 cs.

Baryta Coated Paper

C. Happel, Black Falcon, Hamburg, 2 cs.

Drawing Paper

(———), Ile de France, Havre, 1 cs.

Gummed Paper

B. F. Drakenfeld & Co., Media, Liverpool, 69 cs.

Tracing Cloth

Keuffel & Esser Co., Media, Liverpool, 10 cs. (bleached cotton).

Wrapping Paper

Great Atlantic & Pacific Tea Co., Leerdam, Antwerp, 31 cs.

Miscellaneous Paper

Stevens Nelson Paper Corp., Tungus, Kobe, 28 cs.

Stevens Nelson Paper Corp., Flying Trader, Kobe, 1 cs.

Rags, Raggings, etc.

(———), Kragcholm, Gothenburg, 69 bls. paper waste.

Bankers Trust Co., Kragcholm, Gothenburg, 192 bls. rags.

Penson Co., Kragcholm, Gothenburg, 101 bls. rags.

Amicale Woolservice Co., Brazil, Buenos Aires, 67 bls. rags.

J. Stein, Brazil, Buenos Aires, 39 bls. rags.

E. J. Lang, Konsul Schulte, Antwerp, 65 bls. jute rags.

Glant & Co., Siboney, Havana, 168 bls. rags.

Castle & Overton, Inc., Algonquin Victory, Piraeus, 277 bls. rags & bagging.

D. Benedetto, Algonquin Victory, Piraeus, 128 bls. rags.

1st National Bank of Boston, Algonquin Victory, Pireaus, 79 bls. rags.

D. Benedetto, Algonquin Victory, Palermo, 35 bls. rags.

E. J. Keller Co., Inc., Mathilda Thorden, Gothenburg, 54 coils old sisal & hemp.

Midwest Waste Materials Co., Flying Enterprise, 50 bls. bagging.

Manufacturers Trust Co., Flying Enterprise, Rotterdam, 69 bls. old cotton rags.

(———), Pres. Buchanan, Cochin, 75 bls. old jute rags.

(———), Elysia, Glasgow, 21 bls. paperstock, 49 bls. old bagging, 66 bls. flaxwaste.

E. J. Keller Co., Inc., Elysia, Glasgow, 80 bls. paperstock.

E. J. Keller Co., Inc., Black Falcon, Antwerp, 110 bls. old bagging.

Old Rope

Bemis Bros. Bag Co., Wells City, Avonmouth, 32 coils.

Casein

The Borden Co. Chemical Division, American Counselor, Rotterdam, 1000 bags.

(———), Black Heron, Rotterdam, 1500 bags (lactic).

E. Lang, Brazil, Buenos Aires, 2000 bags (lactic).

N. Y. Trust Co., Brazil, Buenos Aires, 1000 bags (lactic), 600 bags.

Hercules Powder Co., Brasil, Buenos Aires, 1000 Lags (lactic).

Tupman Thorlow Co., Brazil, Buenos Aires, 1100 bags (lactic).

Crawford Co., Brazil, Buenos Aires, 1000 bags (lactic).

The Borden Co. Chemical Division, Brazil, Buenos Aires, 1540 bags (lactic).

American Cyanamid Co., Brazil, Buenos Aires, 600 bags.

Chase National Bank, Villa do Porto, Ponta del Gada, 229 bags (lactic).

The Borden Co. Chemical Division, Flying Enterprise, Rotterdam, 400 bags.

Woodpulp

Chase National Bank, Mathilda Thorden, Stockholm, 3000 bls. sulphite pulp.

Bankers Trust Co., Mathilda Thorden, Stockholm, 3000 bls. sulphite pulp.

National City Bank, Finntrader, Rauma, 265 bls. prime unbleached strong sulphite pulp, 15,047 bls. prime bleached strong sulphite pulp, 215 bls. prime unbleached extra strong sulphite pulp, 1388 bls prime bleached extra strong sulphite pulp.

Woodpulp Boards

Jay Madden Corp., Finntrader, Hango, 146 rolls, 117 bls. (solid white).

IMPORTS AT NEWARK

Week Ending March 17

Madden Reeve Angel & Co. Inc., Finntrader, Hango, 1043 rolls newsprint.

Pulp Sales Corp., Finntrader, Hango, 244 bls. unbleached light & strong kraft sulphate pulp, 5001 bls. prime unbleached greaseproof sulphite pulp, 315 bls. prime unbleached greaseproof sulphate pulp.

Jay Madden Corp., Finntrader, Hango, 94 rolls solid white woodpulp boards.

Pagel Horton & Co. Inc., Mathilda Thorden, Karskar, 2032 bls. woodpulp, 2134 bls. bleached sulphate pulp.

IMPORTS AT PHILADELPHIA

Week Ending March 17

(———), Vinland, Cornerbrook, 4915 rolls newsprint.

Handle WOOD CHIPS

Easier

Faster

At Lower Cost

with

REDLER

"Continuous-Flow"

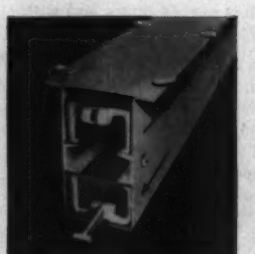
Conveyor-Elevators

Left: Horizontal feed section receives wood chips from storage silos and elevates to adjacent building and digesters. S-A Circular Bin Dischargers under each silo, feed chips into the REDLER.

Wood chips move in a compact stream through the casing of a REDLER which conveys and elevates horizontally, vertically, up inclines and around bend corners. REDLERS often combine the functions of a feeder, a conveyor and an elevator . . . in a single handling unit.

REDLER conveying action consists of skeleton flights linked together and moving through the totally enclosed casings to induce the gentle mass movement of material in any direction. Comparatively small cross section of REDLER casing means that less space is required and casings can be installed without major alterations to existing structures.

REDLERS are the modern, low-cost way to handle wood chips. Write for Catalog 140 which gives complete information . . . no obligation.



Cross-section of standard REDLER casing. This shows material moving with carrying flights in lower run and empty flights returning in circuit fashion in the upper run.

1901-1951

50 years experience with bulk handling

STEPHEN S-A ADAMSON MFG. CO.

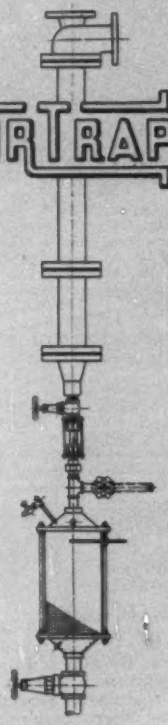
42 Ridgeway Avenue, Aurora, Illinois — Los Angeles, Calif. • Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

THERE IS NO SUBSTITUTE FOR EXPERIENCE

Repeat Orders Prove:

There is nothing better than a VORTRAP



Over 265 Mills in the United States are satisfied users.

72.7 Per Cent of these have REPEATED their Vortrap orders.

1 company has purchased over 500 Vortraps

7 companies have purchased over 100 Vortraps each.

13 companies have purchased over 50 Vortraps each.

They ALL Use Vortraps

- High-grade Paper Machines
- Paper Board Machines
- Pulp Mills
- Waste Rag Systems
- Waste Paper Systems

Our Customers Tell Us That Vortraps

- Improve quality
- Increase wire and felt life
- Increase production
- Decrease waste and maintenance
- Upgrade waste paper furnishes

Insist on VORTRAPS For Your Stock Cleaning Problem

NICHOLS ENGINEERING & RESEARCH CORPORATION

70 PINE STREET · NEW YORK 5, N. Y.

40 S. Los Robles Ave., Pasadena 1, Calif. · 1477 Sherbrooke St., W. Montreal 25, Canada

Philadelphia Inquirer, Mathilda Thorden, Hallatavik, 420 rolls newsprint.
Pagel Horton & Co. Inc., Mathilda Thorden, Karskar, 381 bls. woodpulp.
Pagel Horton & Co. Inc., Mathilda Thorden, Stockholm, 1189 bls. sulphate pulp.
Pulp Sales Corp., Kragcholm, Abo, 1245 bls. mechanically ground woodpulp, 1325 bls. sulphite pulp.
E. J. Keller Co. Inc., Black Falcon, Antwerp, 297 bls. jutewaste.

IMPORTS AT BALTIMORE

Week Ending March 17

Pulp Sales Corp., Kragcholm, Abo, 3541 bls. sulphite pulp, 1040 bls. sulphate pulp.
Chase National Bank, Mathilda Thorden, Stockholm, 2540 bls. dry chemical pulp.
Gehesman & Co., Mathilda Thorden, Stockholm, 5447 bls. unbleached kraft pulp.

IMPORTS AT BOSTON

Week Ending March 17

Leigh Textile Co., Black Heron, Bremen, 50 bls. colored nappers.
E. Butterwort H. & Co. Inc., Black Heron, Antwerp, 154 bls. old bagging.
1st National Bank of Boston, Black Heron, Antwerp, 40 bls. cotton thread waste.
(——), Black Heron, Rotterdam, 500 bags casein.
1st National Bank of Boston, Black Heron, Rotterdam, 114 bls. cotton rags.
S. D. Warren, Black Tern, Rotterdam, 600 bags lactic casein.

U. OF ME. LECTURES

ORONO, Me.—Industrial and business specialists in the field of pulp and paper mill equipment will give University of Maine students the benefit of their training and experience during a series of lectures this spring.

The remaining lectures in the series, arranged by Professor Lyle C. Jenness, are as follows:

March 29—Daniel L. Horigan, Lukens Steel Co., Boston, Mass., "Stainless Steel: Its Use and Application in the Pulp & Paper Industry."

April 12—M. B. Hall, Director of Training, The Foxboro Company, Foxboro, Mass., "Industrial Instrumentation."

April 19—E. J. Ward, General Sales Manager, Cameron Machine Company, Brooklyn, N. Y., "The Evolution of Mill Type Slitters and Roll Winders."

April 26—K. J. Mackenzie, Supt. of Paper Mills, Eastman Kodak Co., Rochester, N. Y., "The Application of Modern Control Instruments to the Paper Making Process."

May 3—A. Jenkins, Jr., Sales Engineer, Bird Machine Co., So. Walpole, Mass., "Stock Screening."

May 17—R. T. DePan, Development Engineer, Downingtown Manufacturing Co., Downingtown, Penna., "Pulping and Stock Preparation."

NEW LITERATURE

The American Tariff League, Inc. Booklet, "Improving Our Tariff Program" by H. Wickliffe Rose. Presented before the Committee on Ways and Means, U. S. House of Representatives, Washington, D. C., January 25, 1951, on the subject of H. R. 1612, a bill to extend the Trade Agreements Act.

The Babcock & Wilcox Tube Co. Bulletin TDC 140. Technical data on analyses, creep strength, properties at room and elevated temperatures, corrosion and oxidation resistance, forging, etc., of three non-hardening straight chromium stainless tubing steels, Croloy 12 A1 (Type 405), Croloy 18 (Type 430) and Croloy 27 (Type 446).

Champion Paper and Fibre Co. Ariel Bond Handbook for Printers. Crystallizes simply and graphically long-established familiar rules of type balance and applies them to business letterhead design. Divided into four sections (1) Type faces — their contribution to letterhead design, (2) Layout—its use in letterhead planning, (3) Use of type rules, ornaments and decorations in letterheads design, (4) Color in letterheads.

Concord Chemical Co. Technical data sheets. Describes various waxes which replace Carnauba and Japan waxes. Features cresylic acid data sheets.

Electric Machinery Mfg. Co. Bulletin, "Synchronizer No. 32." Illustrated technical data on motors and controls for a variety of compressor types and sizes.

Falk Corp. Bulletin 4115, "Steelflex Couplings — Piloted Type." Illustrates and describes the application of speed reducers, couplings, gears and Motoreducers in specific industries.

Henry A. Gardner Laboratory, Inc. Catalog, "Testing Instruments for the Paint and Other Industries." Describes testing apparatus in abstract form for quick and ready reference.

Hobbs Mfg. Co. Bulletin, "The Jacques Power Shear for Versatile Production Cutting." Introduces a new shear for fast production cutting from rolls or sheets of material, from paper and plastics to laminations and light metals.

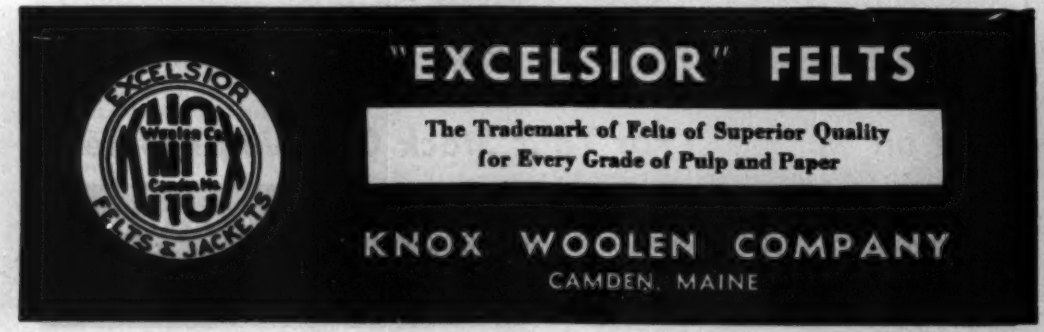
Golden-Anderson Valve Specialty Co. Bulletin No. S-2, "Golden - Anderson 'Cushioned' Single Acting Non-Return Valves." Technical data and detailed drawings of three different yoke assemblies on the elbow, angle and globe bodies. Also, tables showing general dimensions, approximate shipping weight, etc.

Charles Lathrop Pack Forestry Foundation. Book, "Land Hunger in Mexico" by Tom Gill, 84 pp., price $2.00. Purports to tell how destruction of natural resources, wasteful land use, and sharp increases in population are forcing starvation condition upon the people of Mexico, also carries suggestions for a realistic attempt at solving these problems.

Link-Belt Co. Folder No. 2363, "Link-Belt 'RC' Roller Chain Flexible Shaft Couplings." Technical data.

Morden Machines Co. Bulletin, "The Morden Slush-Maker Pulper." Sales and technical copy introducing the new treatment for "tough - pulping problems."

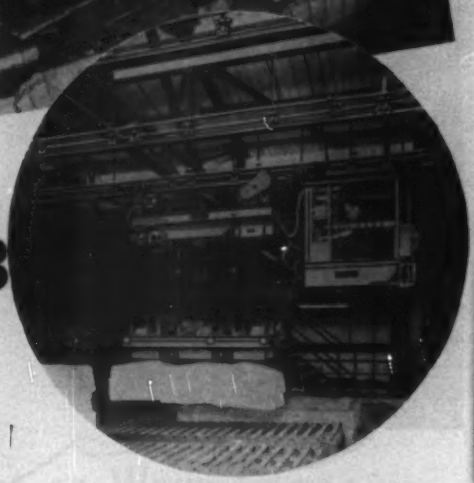
National Production Authority. Booklet, "Inventory Control and Priorities." Answers those questions most frequently asked of the NPA with respect to the application of NPA Regulations 1 and 2 to industry and business.



One Cleveland Tramrail system with screw-type grab serves this 8000-ton pulp storage room.

SCREW GRAB SYSTEM

Handles Baled Pulp



Three bales are picked up at a time with this patented Cleveland Tramrail screw grab. Motor-driven screws secure and release bales without operator leaving cab.

A Cleveland Tramrail overhead handling system with screw-type grab permits one operator in most mills to take care of the complete pulp-handling job, faster and more economical than ever before possible.

The grab has motor-driven auger-shaped screws that worm into bales of pulp, holding them securely for transportation. Bales are released by reversing the screws. All operations are controlled by the cab operator without need of his leaving the cab.

Complete plant coverage may be obtained with a Cleveland Tramrail Pulp-Handling System. Bales may be picked up at unloading platform, placed in storage, reclaimed from storage and delivered to breaker beaters.

GET THIS BOOK!

BOOKLET No. 2006. Packed with valuable information. Profusely illustrated. Write for free copy

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
7105 EAST 130TH ST. WICKLIFFE, OHIO.

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

Nooter Corp. Sheet, "Revised Flange and Coupling Selector." In the easy-to-read slide rule form, provides all the information contained in the earlier selector, plus new and useful data.

Patterson Foundry & Machine Co. Catalog CEC-50. Condensed data on agitating and mixing equipment, kneading and blending units, grinding and classifying equipment, synthesizing and processing systems.

Penfield Mfg. Co., Inc. Brochure, "Penfield Permanent Cartridge Demineralizer." Sales copy on Ion Exchange Systems.

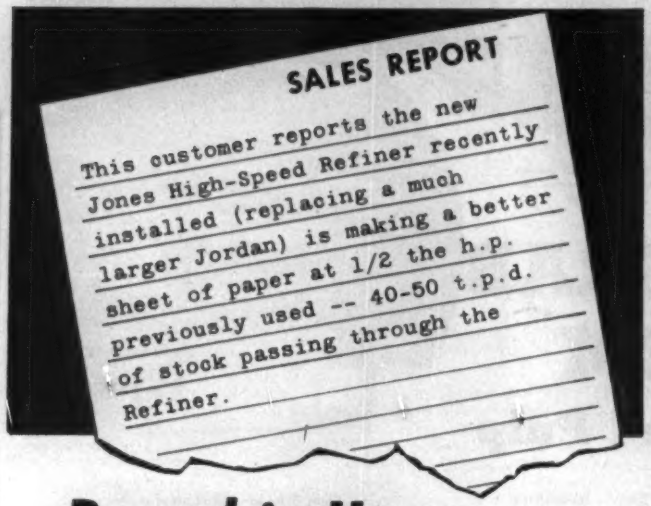
Taylor Forge & Pipe Works. Data Card. Gives the essential dimensions on company's welding fittings and flanges.

Testing Machines Inc. Catalog, "Laboratory Instruments." A guide to the varieties of available paper testing instruments. Brief technical copy with cuts.

Towmotor Corp. Standard Specifications Folder, "Fork Lift Trucks, Tractors and Electric Pallet Truck."

Tracerlab Inc. Booklet, "Beta Gauges for Paper, Metals, Rubber and Plastics." Technical data on Beta Gauges suitable for measuring the weight per unit area or thickness of a wide variety of materials either continuously on the production line, or in the laboratory.

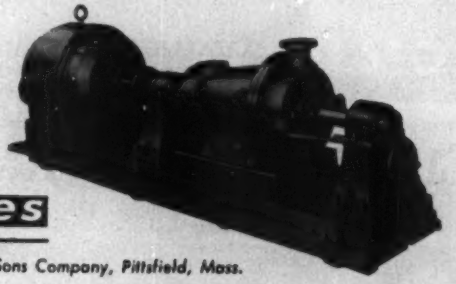
U. S. Dept. of Commerce, Office of Technical Services. Illustrated report, "Electronic Equipment Construction — New Objectives, New Techniques and New Components," 300 pp., price $7.00. Consists of three parts: A description and evaluation of new components; a discussion of new construction techniques; and a survey of research at sixty-two of the nation's leading electronics development firms and laboratories. Includes summary of current research and development needs of the electronics field and special appendices.


SALES REPORT
This customer reports the new Jones High-Speed Refiner recently installed (replacing a much larger Jordan) is making a better sheet of paper at 1/2 the h.p. previously used -- 40-50 t.p.d. of stock passing through the Refiner.

Proved in Use

We've deleted the customer's name: otherwise this is just what the salesman reported. And it is backed up by many similar experiences that prove the Jones High-Speed Refiner is producing results like this, not once but many times.

It can produce them for you. Write for Bulletin EDJ-1011A, or tell us your problem and we'll give you full details.



Jones

E. D. Jones & Sons Company, Pittsfield, Mass.

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

COSMOLINE IS OUT

HOLYOKE, Mass. — The Marvellum Co., is one of the first Holyoke concerns to actually have a sizeable contract from the government's military program, it was disclosed today.

During World War II, the concern did an all-out job producing barrier type wrapping materials, used for overseas shipping of Ordnance and other anti-corrosive materials. Corrosion prevention in those days consisted of smearing the article to be protected with cosmoline and wrapping with grease-proof barrier material.

Since then a complicated chemical compound has been produced by the Shell Development Co., under the trade name VPI.

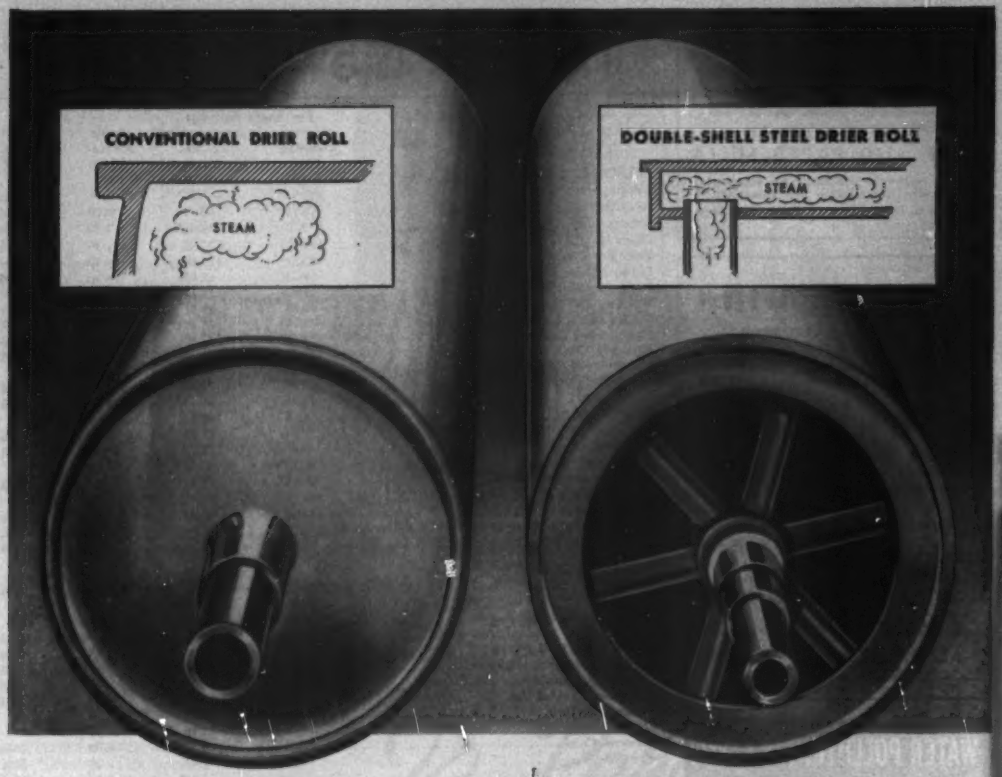
The Marvellum Co., because of its outstanding record during World War II days, in the production of wrapping material, was one of the first to be appointed by Shell to help in this development. Now, largely through the efforts of Marvellum's technical group, the VPI chemical compound has been coated into various wrapping materials, gunboots and other containers, which thoroughly protect the contents from corrosion, without the use of grease or oil.

GLASS FIBER FILTER PAPER

Secretary of Commerce Charles Sawyer personally congratulated Martin J. O'Leary for his valuable contribution to technology in the development and fabrication of a new type glass fiber filter paper 5,000 times more effective than present commercial types.

This paper was developed at the Naval Research Laboratory to be used primarily in gas masks, where it has been noticed that only one particle of smoke in 100,000 passed through the filter. It is also hoped that the new paper will have many other military and industrial uses, such as permitting the design of smaller radio communication units.

The Naval Laboratory pointed out that the new material is unaffected by fungus, can be readily manufactured in any paper mill, uses only materials available in the United States and is thinner and can withstand higher heat than similar purpose papers now used for insulation in electronic items, such as radio condensers.



How to Prevent Wet or Wavy Edges

Users of Lukenweld Jacketed Steel Drier Rolls have found they can dry wider stock without danger of wet or wavy edges. For, with a Lukenweld Drier, there is less dead metal at the edges of the drier roll . . . virtually the entire face provides effective drying.

Lukenweld Jacketed Steel Drier Rolls are constructed so that steam circulates only in the restricted space between the inner and outer shells. Thus you get greater steam velocity and improved heat transfer with *less* steam pressure. Or you can speed your drying rate with the *same* steam pressure.

If you have a job calling for roll drying, you can probably do it better with Lukenweld Jacketed Steel Drier Rolls. They deliver more even heat, are mechanically safe—since steel plate will never fail by shattering—and can be operated at pressures up to 350 psi or higher. At low or high pressures they assure better heat transfer for improved production.

Why not write today for free information on drying and other processing machinery? Just address Lukenweld, Division of Lukens Steel Company, 490 Lukens Building, Coatesville, Pennsylvania.

Improved machinery for improved processes through engineering

LUKENWELD

A DIVISION OF LUKENS STEEL COMPANY

LUKENS

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WATER POLLUTION IS *Costly*
You can stop water pollution—recover valuable chemicals—through waste treatment modernization. Call on the *Ferguson First Team* for able assistance—qualified paper mill specialists—engineers who understand your problems—have solved similar ones for others.
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MISCO
STAINLESS STEEL CASTINGS
FOR ALL EQUIPMENT EXPOSED TO CORROSION BY SULPHITE ACIDS OR OTHER CORROSIVE AGENTS
MICHIGAN STEEL CASTING CO.
DETROIT 7, MICHIGAN

Financial News

STOCK REPORT

	Per Share Earnings: Calendar Year 1949	Per Share Earnings: 12 Mo. to Approx. 12/31/50	Indic Annual Divid. Rate	Mar. 21 Approx. Market Price
PREFERRED STOCKS				
Armstrong Cork Co. $3.75 Cum.	$40.95*	$48.80*	$3.75	$98½
Armstrong Cork Co. $4.00 Cum. Conv.	40.95*	48.80*	4.00	113¾
Celotex Corp. 5% Cum.	6.80c	14.34h	1.00	17⅛
Champion Paper & Fibre $4.50 Cum.	60.09f	163.62	4.50	101¼
Container Corp. of Amer. 4% Cum.	89.52	123.64	4.00	104¼
Crown-Zellerbach $4.20 Cum.	54.38c	67.00h	4.20	102½
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	16.93	16.31	2.50	54¾
Flintkote Co. $4.00 Cum.	62.70	90.41	4.00	103½
Robert Gair Co., Inc., 6% Cum.	13.79†	21.28†	1.20	19½
International Paper Co. $4.00 Cum.	224.55	323.40i	4.00	107¼
Kimberly Clark Corp. 4% Cum.	85.27	114.95i	4.50	107⅞
MacAndrews & Forbes 6% Cum.	61.39	63.03i	6.00	139
Mead Corp. 4¼% Cum.	51.37	97.08	4.25	100¼
Mead Corp. 2% Cum. Conv. 2nd	21.35*	40.05*	2.00	62½
Pabco Products, Inc., 4% Cum. Conv.	56.46	130.13	4.00	101
Rayonier, Inc., $2 Cum.	9.54	17.25	2.00	36½
St. Regis Paper Co. 4.40% 1st A	30.74	65.23	4.40	92½
Scott Paper Co. $3.40 Cum.	51.15*	65.41*	3.40	98
Scott Paper Co. $4.00 Cum.	51.15*	65.41*	4.00	104¾
Sutherland Paper 4½% Conv.	46.92	81.31	4.25	115
U. S. Gypsum Co. 7% Cum.	283.37	348.48	7.00	182½
United Wallpaper Inc., 4% Cum. Conv.	2.14	8.84	2.00	26½
West Virginia Pulp & Paper 4½% Cum.	61.28e	99.26h	4.50	109½
COMMON STOCKS				
APW Products Co.	(d)0.81	0.45i	—	7¾
American Writing Paper Corp.	.04	2.02	0.50	10
Armstrong Cork Co.	6.57	8.13	3.75	55
Celotex Corp.	1.65c	3.74h	1.00	17¾
Certain-Teed Prods. Corp.	2.84	3.92	1.50	17½
Champion Paper & Fibre	5.15f	9.44	2.45	49¾
Congoleum Nairn Co.	3.04	3.29	2.00	25⅞
Container Corp. of America	4.23	5.87	2.50	36¼
Crown-Zellerbach	6.02e	7.34h	2.20	50
Dixie Cup Co.	7.44	12.18	1.50	54
Eastern Corp.	0.04	4.30	1.00	20½
Flintkote Co.	4.33	5.83	3.00	31¾
Robert Gair Co., Inc.	2.11†	3.37†	0.70	12⅝
Great Northern Paper Co.	4.87	4.33	3.00	48¾
International Paper Co.	7.12	8.65i	2.50	51
Johns-Manville Corp.	4.83	7.22	3.50	53¾
Kimberly Clark Corp.	5.29	6.28h	1.80	44¼
MacAndrews & Forbes Co.	3.64	3.74i	3.00	39¾
Marathon Corp.	3.79c	5.40h	1.40	44½
Mead Corp.	4.10	5.64	2.20	25⅜
National Container Corp.	0.95	2.41	0.75	12½
Pabco Products, Inc.	0.85	1.87	0.60	20¾
Rayonier, Inc.	4.75	9.61	2.50	48¾
Ruberoid Co.	7.93	9.64	3.18	57½
St. Regis Paper Co.	0.91	2.10	0.60	12⅞
Scott Paper Co.	3.04	3.90	2.00	44½
Sutherland Paper Co.	4.62	7.66	2.75	45½
Union Bag & Paper Corp.	5.01	7.23	3.00	40⅞
United Board & Carton	(d)1.61b	1.56g	0.50	18⅞
U. S. Gypsum Co.	13.51	16.70	10.00	117¾
United Wallpaper	(d)0.01	(d)0.01	—	3½
West Virginia Pulp & Paper	8.58c	13.75h	5.00	76¼

(b) Year ended 11/13/49
(c) Year ended 1/31/50
(d) Deficit
(e) 12 months to 10/31/50
(f) 9 months to 12/31/49
(g) 12 months to 11/11/50
(h) 12 months to 1/31/51
(i) 12 months to 9/30/50
(*) Earnings per combined preferred shares
(†) Includes domestic and Canadian subsidiaries and 60% equity in Southern Paperboard Corp.

Union Bag & Paper Corp. achieved the greatest annual sales volume in its history in 1950, Alexander Calder, president of the company, announced March 6 in a preliminary report to stockholders. Reaching a new high of $80,374,420, the 1950 volume showed an increase of $14,885,890 or approximately 23 per cent over 1949 sales of $65,488,530 and were $3,844,667 greater than the previous peak volume of $76,529,753 attained in 1948.

Net income of the corporation from 1950 operations amounted to $10,897,604, after provision of $9,988,338 for all taxes, compared with net income in 1949 of $7,486,638, after $5,539,436 for taxes. The 1950 earnings are equivalent to $7.23 per share on the 1,508,298 shares of outstanding common stock as compared with $5.01 per share on 1,493,698 shares in 1949.

Donohue Bros., Ltd., reports another year of progress for 1950. The company owns and operates pulp and paper mills at Clermont, Que. Net profits of $5.50 per share of capital stock showed a 48 percent gain over the previous year's $3.70 per share. Dividends totaled $2 per share as against $1 per share in the preceding period.

Production of mechanical pulp and newsprint paper was up 19 percent to 71,546 tons from 60,137 tons in 1949 resulting from capital improvements which have been completed. These not only increased productive capacity but also effected material economies in operating costs, thus offsetting to a large extent the increases which occurred during the year in the cost of labor, raw materials and services.

Fraser Cos. Ltd., and wholly owned subsidiaries report net profit for the year ended December 31, 1950 amounted to $5.71 per share, common, after preferred dividends, as compared with $3.63 for 1949. All plants of the company operated at capacity during 1950, with the exception of the plant producing groundwood specialty papers, which operated slightly under normal capacity during the first six months, says Aubrey Crabtree, president. The demand for all products manufactured exceeded capacity to produce during the last five months of the year.

During the year 12,440 4¼ percent preferred shares were redeemed and cash was deposited in December for the redemption of 15,000 additional preferred shares which were redeemed in January. The balance sheet at December 31 reflects these redemptions and the payment of $2,798,880 in respect thereof. In addition, funded debt was reduced to $5,600,000. Expenditures for additions and improvements to plants and properties for 1950 amounted to $1,479,543. Dividends totalling $4.75 per share, preferred, and $2.50 per share, common, were paid during the year. Inventories were moderately lower at $7,413,075 as against $7,758,719.

Hinde & Dauch Paper Co., showed a substantial increased profit in 1950 over the preceding year. For the year ended December 31, 1950, profits totalled $1,255,921 or $4.19 per share compared with $740,730 or $2.47 per share in 1949.

During the year $660,160 was spent on maintenance and the fixed assets account was increased by $560,750.

Mr. Frohman states that although working capital is sharply lower than in 1949, the balance sheet shows a new item, a special fund for capital expenditure commitments of $1,750,000.

For the fiscal year 1950, the following is shown, with figures in brackets being for 1949: Sales, $15,214,473 ($13,334,539); Net Profit, $1,255,921 ($740,730); Per Share, $4.19 ($2.47); Current Assets, $3,964,752 ($4,635,774); Current Liabilities, $1,156,391 ($814,001); Working Capital, $2,808,361 ($3,821,773); Current Ratio, $3.4 to 1 (5.7 to 1).

Is Paraffin

DOING THE JOB?

Possibly so, however, from past experience, we at Bareco know that there are many of you using a paraffin application that for one reason or another find that it's not doing the WHOLE job. If you fall into this category Bareco Microcrystalline Waxes may be able to help. Are you aware, for instance, that paraffin may be modified by small additions of the correctly selected grade of microcrystalline wax to achieve the following results:

1. Higher Melting Point
2. Increased Sealing Strength
3. Increased Flexibility
4. Increased Grease Resistance
5. Increased Mar Resistance
6. Reduced Blocking

Of course, we are not suggesting that one microcrystalline wax will solve all these problems, however from the 19 different grades manufactured by Bareco, the correct one can be chosen to gain any one of the above desired properties.

Write for free Bareco Microcrystalline Wax samples and specifications today. Test these samples in your own laboratories and determine to your personal satisfaction how these quality waxes can modify or replace your paraffin application for increased effectiveness.
Also, new Bareco pamphlet series, "The Wax Story" will be furnished free of charge upon your request.

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Since 1929

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Semi-Chem. and Chemical Pulp
Processes
Pilot Plant Facilities
THE KINSLEY CHEMICAL COMPANY
Cleveland 11, Ohio

SUTHERLAND
BEATING SYSTEM
FOR HIGH SPEED
PAPER MACHINES
SUTHERLAND
REFINER CORP., Trenton 6, N. J.

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Feb. 10	Feb. 17	Feb. 24	Mar. 3	Mar. 10
1951	98.2	102.2	102.5	102.7	102.6
	Feb. 11	**Feb. 18**	**Feb. 25**	**Mar. 4**	**Mar. 11**
1950	96.3	91.0	93.9	93.8	96.8

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	92.6	93.6	96.7	95.4	96.4	97.7	85.3	99.6	96.1	101.2‡	100.3‡	93.7‡	95.8‡
1951	99.5‡	101.5‡											

‡ Preliminary.
r Revised.

COMPARATIVE YEARLY SUMMARIES

	1944	1945	1946	1947	1948	1949	1950	1951
Year to Date	88.6	87.9	97.5	104.8	100.5	93.4	100.3	100.7
Year Average	88.1	89.4	100.1	104.3	98.2	88.6	97.9‡	

PAPERBOARD OPERATING RATIOS†

	Feb. 10	Feb. 17	Feb. 24	Mar. 3	Mar. 10
1951	104	105	105	105	106
	Feb. 11	**Feb. 18**	**Feb. 25**	**Mar. 4**	**Mar. 11**
1950	93	92	90	88	89

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	88	92	91	92	91	94	82	100	96	102	101	95	94
1951	102	103											

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

NOTE: The chart shows the ratio through December 1950 on the basis of 6-day capacity. Beginning with January 1951 the ratio is shown on the new basis of normal 6- and 7-day capacities. Corresponding weekly and monthly ratios for 1950 on the new basis, shown in the tables above, are somewhat lower.

Paperboard operating ratios continue on the basis of a 6-day week.

† Per cents of operation based on "inch-hours" reported to the National Paperboard Association.

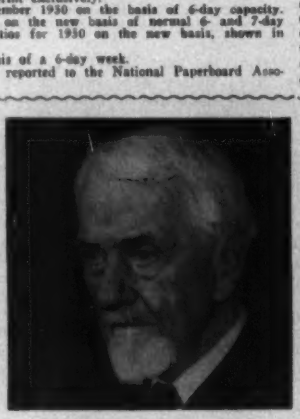
OBITUARIES

George T. Chestnut, foreman at Strathmore Paper Co., died March 11 at his home in Southwick, following a short illness. He had been employed at Strathmore for 46 years.

Charles Lukens Huston, 94, an "elder statesman" of the American steel industry, and long-considered Coatesville's first citizen, died at his home in Coatesville, Pa., adjacent to the plant and offices of Lukens Steel Co. which he had served for more than three-fourths of a century. Mr. Huston had remained active in the business, and was at his desk almost daily until one week ago.

Mr. Huston marked his 75th anniversary with Coatesville's principal industry last December, achieving a record which is believed without parallel in the steel industry as well as in American business history. He started his long and successful career with Lukens, then known as Huston & Penrose & Co. in 1875. He was the oldest living alumnus of Haverford College.

A contemporary of Andrew Carnegie, John Fritz and Charles M. Schwab, Mr. Huston has played an important part in the development of America's No. 1 industry — steel. He was the patentee of several highly regarded inventions used in the manufacture of steel and he planned and designed Lukens four-high 206-inch mill — world's largest plate mill. He was the



only living American who was an honorary member of the American Iron and Steel Institute.

Mr. Huston was born in Coatesville July 8, 1856, the son of Charles Huston, M.D., and Isabella Pennock (Lukens) Huston, granddaughter of Isaac Pennock, a founder of the business in 1810. In 1879, Mr. Huston was taken into partnership in the business and placed in charge of the puddling furnace, where pig iron was converted into wrought iron. He took over the management of all plants in 1882 and continued in sole charge of operations until 1925. He was elected vice-president of Lukens in 1897 and from 1917 to 1925, he was vice-president and works manager. In 1925, he relinquished the position of works manager but continued as first vice-president till the time of his death.

VALUE in a fine product reflects the experience and skills of its makers.

VALUE in Fourdrinier wires is a matter of record... paper quality and production records in mills throughout America reflect the fact that *Appleton Wires are Good Wires!*

APPLETON WIRE WORKS, INC.
APPLETON • WISCONSIN

CLEARING HOUSE

HELP WANTED

MEN WANTED
POSITIONS OPEN

We can place—board mill superintendents (2); superintendents for wet machine mill (3); asst. general managers for paper mills (2).

Master mechanics, plant engineers, chemical engineers, designers and draftsmen; chemists, chemical engineers and laboratory men; time study men; salesmen for paper and for paper mill machinery; beater engineers; Cylinder and Fourdrinier machine foremen.

LIST YOUR CONFIDENTIAL APPLICATION WITH US
to keep informed of attractive positions open in the pulp and paper mills.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston 8, Mass.
SPECIALISTS IN PLACING PULP AND PAPER MILL EXECUTIVES

M-23

WANTED
ASSISTANT MILL MANAGERS
We have two attractive positions open.
Charles P. Raymond Service, Inc.
294 Washington Street, Boston, Mass.
M-23

Designers, exp. pulp and paper; Development Engr., experienced converting, transparent packaging; Sales Engineers a&c Sales-Service Men, mchy. Assistant Plant Engineer, M.E., several yrs. experience; several Chemists, some with exper. in plastic coating; Superintendents; Night Superintendents; Tour Boss for light-wt. papers; Tour Bosses for Board Mills; Beater Engineers; Machine Tenders. Many other positions.

Personnel Service Assoc., 115 State Street, Springfield 3, Mass. Confidential Placement Service. Personnel Consultants.

M-23

PRODUCTION CHIEF

Paper converting, nationally known. Printing, coating, gumming, laminating, finishing operations. Lifetime position for top-flight production executive. Our people know of this ad. Send full details confidentially to President, Box 50-443, care Paper Trade Journal. TF

SALARIED POSITIONS $3,500 to $35,000. We offer the original personal employment service (established 41 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC. —117 Dun Bldg., Buffalo, 2, N. Y. TF

WANTED—25 experienced paper mill Design and Layout Engineers. Men required for steel and concrete structural design, mechanical layout, piping design, and electrical design. In first letter give complete engineering experience, age, education, etc. Address Construction Engineer, P. O. Box 1844, Savannah, Ga. A-13

HELP WANTED

RESEARCH-DEVELOPMENT

Large research and development laboratory has openings for two chemists or chemical engineers with paper mill experience. Ph.D. required for one position. Location: near New York City. Submit outline of qualifications. Address Box 51-139 Care Paper Trade Journal. A-6

BAG MACHINE ADJUSTOR—must be first class adjuster on Potdevin, Weber SOS Machines. Equally experienced on sacks. Flat and square machines, also dry cleaning bag machine. Knowledge of printing necessary. Address Box 51-112, care Paper Trade Journal. M-30

EXPERIENCED PAPER MACHINERY DESIGNER with special knowledge of reels, winders and cutters. Excellent opportunity with well established company. Address Box 51-49 care Paper Trade Journal. TF

WANTED — SALES ENGINEER — Experienced in Pulp and Paper Mills, for sales and service work. Excellent opportunity with old established machinery manufacturer. In reply, give resume of education, experience and current salary. Address Box 51-86 care Paper Trade Journal. TF

WANTED—TOP GRADE MAN fully experienced, for manager of an eastern chipboard mill. Furnish details of experience and references. Excellent opportunity. Address Box 51-78 care Paper Trade Journal. TF

WORKING SUPERINTENDENT for small, fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 51-86 care Paper Trade Journal. TF

UNUSUAL OPPORTUNITY with progressive concern for an experienced pulp mill engineer. Must have chemical background and know kraft bleaching. Location in New Jersey. Address Box 51-123 care Paper Trade Journal. M-30

YOUNG MAN with Southern experience to organize small personnel-safety section Southern Kraft Mill. Address Box 51-132 care Paper Trade Journal. A-13

SITUATIONS WANTED

Veteran, 29, B.S., M.S. Wood Technology; Physics, Organic Chemistry minors. Two years broad experience paper research followed by 15 months paper problems for starch company. Wish to reenter paper field in responsible position with progressive paper manufacturer. Special experience in sizing and coating. Address Box 51-135 care Paper Trade Journal. M-23

PAPER MILL SUPERINTENDENT TWENTY-FIVE YEARS OF PRACTICAL EXPERIENCE manufacturing folding boxboard, writing, book, twisting, sulphite specialties, groundwood specialties, kraft specialties. Well experienced in stock preparation for above grades. Run mill economically. Best of references. Address Box 51-60 care Paper Trade Journal. M-23

SITUATIONS WANTED

PLANT MANAGER—Paper and Board and their conversion; wants challenging opportunity. Highly successful in organization; administration; labor relations and high level production. Presently employed. Address Box 51-63 care Paper Trade Journal. M-30

HIGH GRADE BEATER ENGINEER seeks difficult position. Experience covers rope, rag bonds and sulphite specialties. Expert color man. Demands good salary and earns it. Age fifty-six. Address Box 51-100, care Paper Trade Journal. M-23

MANAGER — FOURDRINIER PAPERS. Knows details of manufacture. Many years with America's finest mill. Can build smooth organization. Address Box 51-101 care Paper Trade Journal. M-23

SALESMAN with considerable mill merchant experience, desires change to a position of wider responsibilities. Particularly well equipped to handle fine printing papers. Addres Box 51-104 care Paper Trade Journal. M-23

PAPER MILL ENGINEER—Plant Engineer with design experience sulphite pulp, cylinder and Fourdrinier specialties, desires connection. Address Box 51-121 care Paper Trade Journal. TF

PAPER MILL ENGINEER with managerial experience and cost control minded, desires a change offering greater opportunity. Address Box 51-118 care Paper Trade Journal. A-6

KRAFT MILL MAN with chemical training and 30 years successful experience with production, quality and cost control, using soft and hard woods; also experienced in getting new plants ready and into operation. Anyone interested please address Box 51-128 care Paper Trade Journal. M-30

SEMICHEMICAL PULP RESEARCH MAN AVAILABLE—M.S. Degree in Chemical Engineering. Will plan and conduct a semi-chemical pulp development program or a pulp improvement program. Address Box 51-134 care Paper Trade Journal. M-23

FOR SALE

FOR SALE

2—New Inlets and Head Boxes.

1—36" high x 153" Deckle.

1—36" high x 139" or 143" deckle.

For 300 to 800 F. P. M. wire speed.

VALLEY IRON WORKS COMPANY
Appleton, Wisconsin

M-23

FOR SALE—One Bagprint B-10 flat and square bag machine, mfg. size 3x5 to 8½x18. Can presently be seen in operation. Address Box 51-97 care Paper Trade Journal. M-30

RATES FOR CLEARING HOUSE ADVERTISING

HELP WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

SITUATIONS WANTED—10c a word, double rate for heavy face type. Minimum charge $2.50. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE—10c a word. Double rate for heavy face type. Minimum charge $2.50.

WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

OPPORTUNITIES—10c a word. Double rate for heavy face type. Minimum charge $2.50.

Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance.

If box number is used—70 cents additional.

Address replies to advertisements appearing under Box Numbers in care of PAPER TRADE JOURNAL, 15 West 47th Street, New York 19, N. Y.

FOR SALE | FOR SALE | FOR SALE

PAPER MACHINE

Cylinder mould 36" x 100" with cypress vat and shower. Some spare wires. This mould is also equipped with two suction fans motor driven (motors) included one ten HP and one three HP.

Ten—Felt carrying rolls averaging 8" dia. by 112" face, with bearings, anti-friction.

One—top couch rubber covered, plastometer about one hundred fifty. 12" dia. x 103" face.

One—18" dia. x 109" face pressure roll, sleeve type bearings with arms and leverage system for loading.

One—8 ft. dia. x 103½" face Yankee dryer with steam piping (includes 2" Davis steam pressure regulator and trap.) Also includes drive consisting of fifty HP and nine hundred Westinghouse motor with resistance tanks and drum controller. One silent chain drive motor to jackshaft, spur gear drive jackshaft to dryer.

Two—custom made doctors.

One—Horizontal felt stretcher.

Two felt showers. (Two suction boxes)

One—Rice Barton and Fales calender stand with one 18" x nine foot roll and one 11" by nine foot roll. No drive.

One—Special drum reel with Reeves 00B vari drive.

One—Special rewinder and slitter with drives.

One—6" x 12" vertical single cylinder stack pump. No drive.

One—Stainless steel multiple section stuff box. No piping.

We understand electrical equipment is for three phase, sixty cycle and 440 volt.

FRANK H. DAVIS COMPANY

175 Richdale Ave. Cambridge 40, Mass.

M-23

FOR SALE—Duplex Cutter, 120" Hamblet, complete with Moore & White power driven lay boy and power lowering and raising for skid channels, Maxson overlapping delivery. Simco static eliminator and 6 roll back stand. Lee Paper Company, Vicksburg, Michigan. M-23

FOR SALE—84" Seybold 20th Century Automatic Power Cutter, mill type, with 7½" H.P. A. C. motor; in good working condition, immediately available. Address Box 51-126 care Paper Trade Journal. M-23

CAN OFFER approximately one (1) carload per month side roll of 10 lb. tissue 3 inches wide, 30 inches in diameter, wound on a 3 inch paper core. If interested, please advise Box 51-131 care Paper Trade Journal. M-23

FOR SALE

1—112" Cameron, Type 18, 60" rewind.

BEATERS
1—1½ lb. Laboratory Beater.
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1—24" diameter x 94" face.
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1—148" Nash Felt Conditioner.

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2—Savealls, 36" diameter x 136" face cylinder molds, iron end vats.

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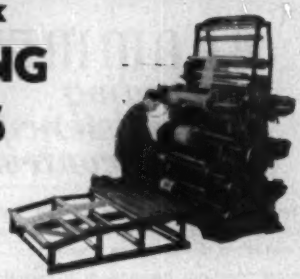

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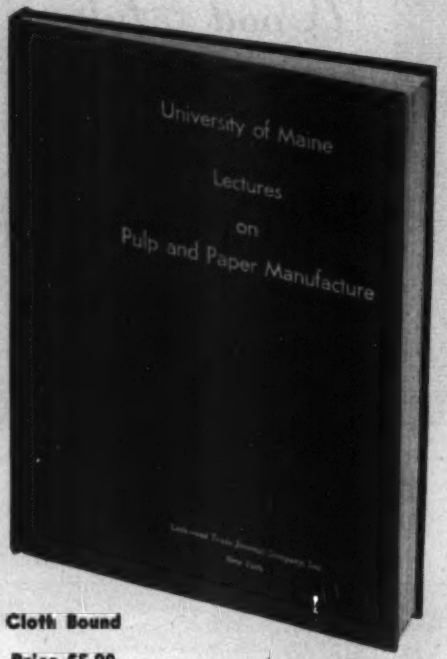

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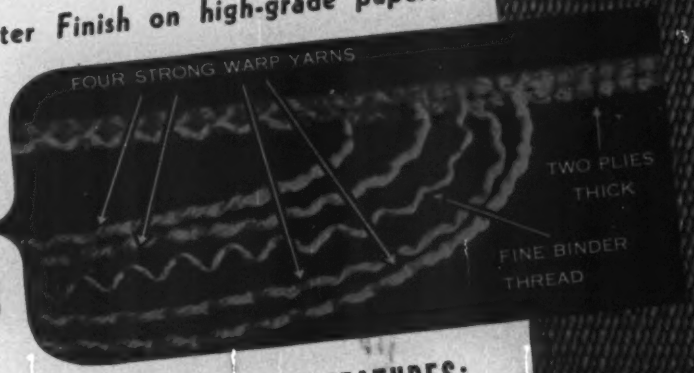

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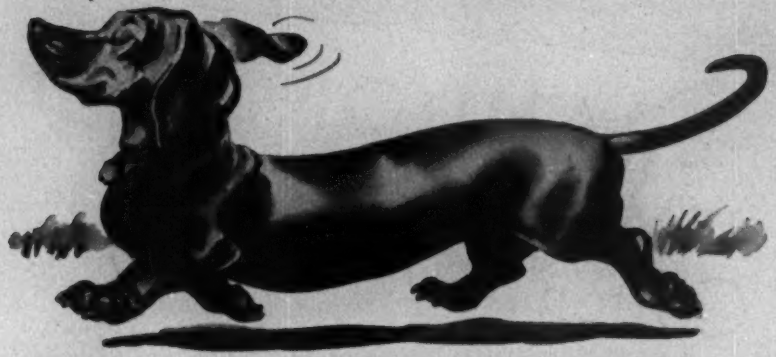

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